

U
408.3

A1
FM 6-20-2

Reference

FM 6-20-2

DEPARTMENT OF THE ARMY FIELD MANUAL

FIELD ARTILLERY TECHNIQUES



HEADQUARTERS, DEPARTMENT OF THE ARMY
JANUARY 1962



FIELD MANUAL }
No. 6-20-2 }

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON 25, D.C., 8 January 1962

FIELD ARTILLERY TECHNIQUES

	Paragraphs	Page
CHAPTER 1. INTRODUCTION.....	1-4	3
2. COMMAND, CONTROL, AND COORDINATION		
Section I. Command.....	5-7	5
II. Artillery staffs.....	8-20	6
III. Command posts.....	21, 22	13
CHAPTER 3. ARTILLERY ORGANIZATIONS		
Section I. Units.....	23-27	17
II. Headquarters.....	28-32	18
CHAPTER 4. CONDUCT OF OPERATIONS		
Section I. Positioning artillery units.....	33-35	19
II. Reconnaissance, selection and occupation of position.....	36-50	24
III. Displacements.....	51-54	31
IV. Artillery marches and bivouacs.....	55-66	33
V. Security.....	67-73	37
VI. Artillery communications.....	74-77	41
VII. Army aviation.....	78-81	42
CHAPTER 5. FIRE SUPPORT		
Section I. General.....	82-84	43
II. Techniques of fire planning.....	85-94	43
III. Target analysis.....	95-103	50
IV. Fire direction.....	104, 105	55
CHAPTER 6. COORDINATION OF FIRE SUPPORT		
Section I. General.....	106-108	57
II. The tactical operations center.....	109-114	58
III. Fire support coordination center.....	115-121	62
IV. Procedure.....	122-125	63
CHAPTER 7. ARTILLERY IN OPERATIONS UNDER SPECIAL CONDITIONS		
Section I. General.....	126, 127	67
II. Amphibious operations.....	128-133	67
III. Night attacks and raids.....	134, 135	73
IV. Mountain operations.....	136-142	73
V. Jungle operations.....	143-152	75
VI. Desert operations.....	153-155	77
VII. Combat in towns.....	156-158	78
VIII. River crossings.....	159-161	79
IX. Supporting friendly guerrillas.....	162-164	80

This manual, together with FM 6-20-1, 27 October 1961, supersedes FM 6-20, 10 December 1958 and FM 6-21, 24 February 1960.

	Paragraphs	Page
Section X. Supporting antiguerrilla operations.....	165-167	81
XI. Airmobile artillery movements.....	168-170	82
XII. Airborne operations.....	171-176	84
APPENDIX I. References.....		87
II. The fire support plan.....		89
III. Fire support plan appendixes.....		99
IV. Target analysis.....		105
V. Fire capabilities checklist method of preparing schedules of artillery fires.....		107
VI. Fire support coordination charts and forms.....		113
VII. A guide and checklist for the preparation of artillery standing operating procedures.....		133
INDEX.....		157

CHAPTER 1

INTRODUCTION

1. Purpose

This manual is a guide for artillery officers and commanders and staffs of all arms. It is concerned with the techniques of field artillery units. It is further concerned with the operations of field artillery battalions. It covers command, liaison, artillery staffs, conduct of battalion operations, fire planning, and fire support coordination.

2. Terms

a. The term "artillery" as used herein refers to field artillery.

b. The term "maneuver element" referred to in this manual can pertain to either a regiment, brigade, combat command, or similar organization.

c. The term "company" as used herein can also refer to troop or battery.

3. Tactics

Artillery tactics and the fundamentals of artillery employment are covered in FM 6-20-1.

4. Changes or Comments

Users of this manual are encouraged to submit recommended changes or comments to improve the manual. Comments should be keyed to the specific page, paragraph, and line of the text in which the change is recommended. Reasons should be provided for each comment to insure understanding and complete evaluation. Comments should be forwarded direct to Commandant, U.S. Army Artillery and Missile School, Ft. Sill, Okla.



A



CHAPTER 2

COMMAND, CONTROL, AND COORDINATION

Section I. COMMAND

5. General

The command responsibilities of artillery commanders, in general, are discussed in chapter 4, FM 6-20-1.

6. Battalion Commander

a. The battalion commander is responsible for establishing policies and planning and supervising the tactical employment of his battalion to include—

- (1) Reconnaissance, selection, and occupation of position (RSOP).
- (2) Formulation of the fire plan; fire direction; the execution of fires; and, when applicable, the detailed coordination and integration of the available means of fire support with each other and with the plan of operations of the supported unit.
- (3) Maintenance of liaison with the supported or reinforced unit commanders either by direct contact or by representatives and, when the battalion has a mission of direct support, acting as fire support adviser and coordinator for the supported unit commander.
- (4) Provision of continuous ground, map, and aerial reconnaissance for routes, position areas, and observation posts.
- (5) Maintenance of current information about both the enemy situation and the situation of the supported troops.
- (6) Control of ammunition expenditure.

b. Other functions for which the battalion commander is responsible, whether in garrison or engaged in active operations, are establishing policies, planning, and supervising the following:

- (1) *Training.* Through his staff, the bat-

talion commander coordinates the training program of his unit with that of the next higher headquarters, insures that training is adequate, and procures training facilities. He supervises the training by frequent personal inspections, inspection by the staff officers, and reports of battery commanders.

- (2) *Discipline.* The battalion commander instills and maintains discipline in his battalion by closely supervising the mental, moral, and physical training of his men; by maintaining good morale; by personal example; and by the administration of justice. He appoints summary courts-martial and special courts-martial (unless otherwise directed), reviews their findings, and supervises the administration of, or imposes punishments under, Article 15, Uniform Code of Military Justice. In all disciplinary matters which are properly the prerogatives of the battery commanders, he is careful to exercise supervision only, leaving active control to the battery commander.
- (3) *Morale.* Through his staff and subordinate commanders and by personal action, the battalion commander gives close attention to building and maintaining the morale of his unit. He prescribes a fair and uniform policy governing promotions, leaves of absence, decorations and awards, and duty assignments. He obtains for his battalion the best available quarters and rations, recreational equipment and programs, religious services, postal facilities, and services of the

various welfare agencies. By means of personal inspections and with the assistance of the battalion surgeon, he controls sanitation, personal cleanliness, and health.

- (4) *Administration.* By the proper organization and use of his staff, the battalion commander insures the efficient administration of his unit. An efficient staff relieves the commander of attention to detail and routine duties, such as records and reports. He makes frequent inspections to assure himself that his administrative policies are followed, that unit messes are sanitary and properly operated, that living quarters are adequate, and that the operating workload is equally distributed.
- (5) *Supply and maintenance.* Adequate and proper supply and maintenance will assist the battalion commander in maintaining the combat efficiency of his unit. The battalion commander usually discharges his supply responsibilities through the S4. He supervises, however, to see that his supply policies are followed, that supply discipline is maintained, and that his battalion is adequately supplied with the best available equipment, clothing, and rations. He provides for the training of all personnel in supply discipline. He insures that ammunition supply is

adequate and that basic loads are maintained. By means of command inspections, he insures that weapons, vehicles, and other equipment are on hand and properly maintained. In addition, he may request technical inspections by technically qualified personnel of maintenance organizations.

7. Estimates of the Situation, Plans, and Combat Orders

The artillery commander plans for and recommends the assignment, attachment, organization, and employment of artillery. As the fire support coordinator, he anticipates requirements and coordinates and recommends the employment of other fire support means. To accomplish this, the artillery commander's estimate of the situation and his plan to provide the best possible fire support must be continuous. His plans are incorporated into the instructions issued for the employment of the force. With each change in the situation, the artillery commander reexamines all considerations and decides if changes in fire support measures are advisable. This continuing process is conducted concurrently at each echelon in close collaboration with the force commander and his staff. For discussion of the techniques involved in the preparation of estimates of the situation, plans, combat orders, and standing operating procedures, see FM 101-5. For appropriate forms and samples, see the appendixes.

Section II. ARTILLERY STAFFS

8. General

a. The organization and functions of artillery staffs are flexible and may be varied by the commander to meet the demands of each situation. Since control of artillery and coordination of fire support are the principal duties of the commander, he organizes his staff to assist him in discharging those responsibilities.

b. The composition and organization of a theater army, or army group artillery staff are determined by the artillery officer at each echelon.

c. Personnel for the artillery staffs at army

and lower echelons are provided in appropriate tables of organization (figs. 1-4).

9. Executive Officer

The executive officer of an artillery staff performs duties similar to those set forth in FM 101-5 for a chief of staff. Also, he may supervise the establishment and operation of the artillery command post.

10. Adjutant (S1)

The S1 or adjutant of an artillery staff is the adviser to the commander on matters of personnel and general administration. When an S1

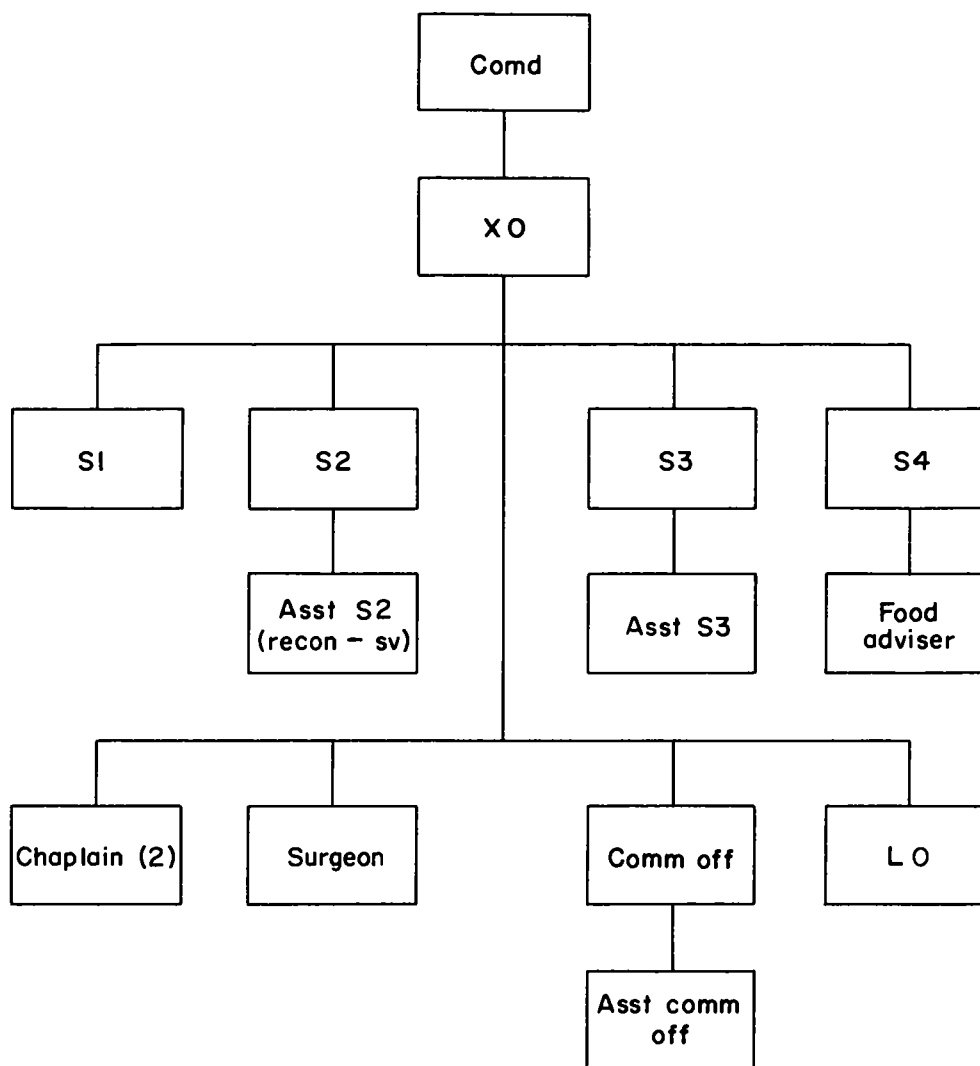


Figure 1. A type artillery group staff.

is not authorized by TOE, another officer is assigned these duties.

11. S2

The S2 of an artillery staff directs the target acquisition and intelligence effort of the artillery agencies. His duties are to—

a. Initiate a systematic and coordinated search for target information by all available artillery collecting agencies. To accomplish this, he must—

- (1) Coordinate, through the chain of command and staff contacts, the work of artillery intelligence personnel and

observation agencies under his control and in lower echelon units. This includes the coordination of Army aviation used for artillery observation.

- (2) Maintain close liaison with the intelligence sections of higher, lower, adjacent, and supported units for the purpose of exchanging information and rendering mutual assistance in the target acquisition effort.
- (3) Foresee the need for, obtain, and distribute maps, photomaps, and aerial photographs.
- (4) Study and interpret aerial photo-

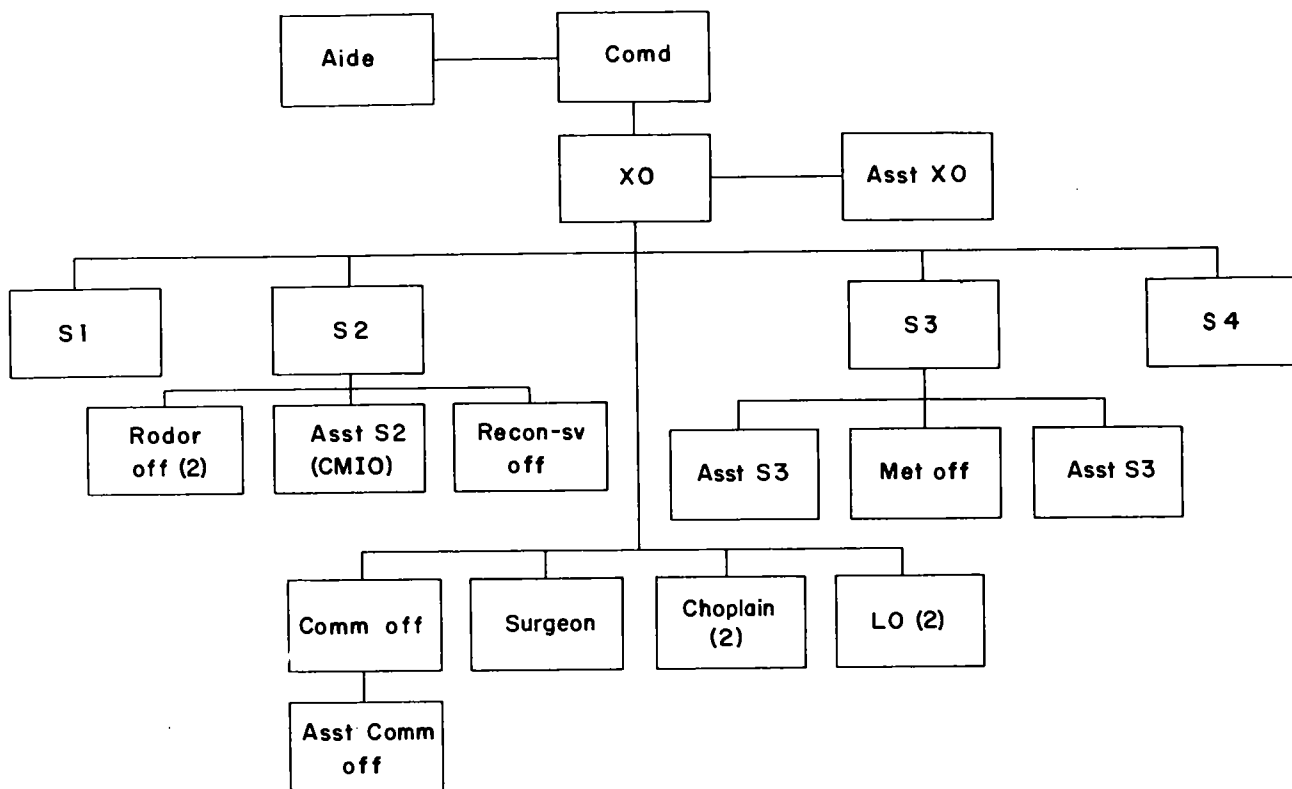


Figure 2. A type division artillery staff.

graphs when no photointerpreter teams are available, or supervise their activities when they are present.

- (5) Direct counterbattery intelligence activities.
- (6) Originate requests for reconnaissance missions by supporting Naval Aviation and Air Forces.

b. Collect, evaluate, and interpret target information and intelligence and disseminate that information and intelligence in time for units to act upon it.

c. Keep the commander, his staff, and subordinate units informed of the enemy situation and capabilities.

d. Collaborate with the S3 on intelligence and operations.

e. Examine maps, photomaps, and aerial photographs for reliability of control and disseminate this information.

f. Prepare and disseminate intelligence reports.

g. Keep the situation map and any other pertinent records required by the commander.

h. Furnish pertinent data for the command report.

i. Prepare a counterintelligence plan and supervise its execution.

j. Prepare the artillery intelligence bulletin (corps and army artillery S2 only) for distribution of enemy information to higher, adjacent, and subordinate commanders. These bulletins are prepared only as required.

k. Supervise artillery intelligence training.

l. Inform the survey officer of all matters affecting survey.

m. Obtain and distribute meteorological messages.

12. S3

The S3 of an artillery staff is responsible for organization, plans, training, and operations. His duties are to—

- a. Make recommendations to the commander

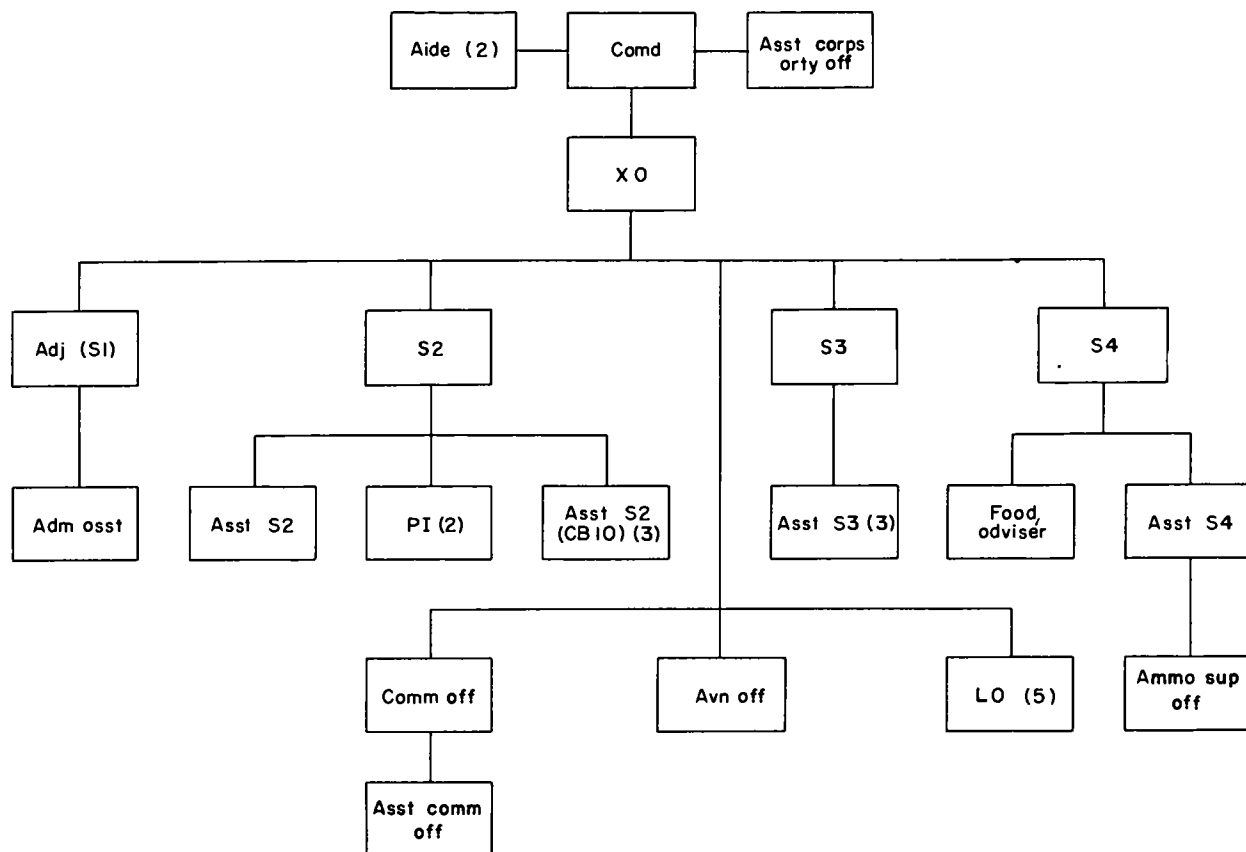


Figure 3. A type corps artillery staff.

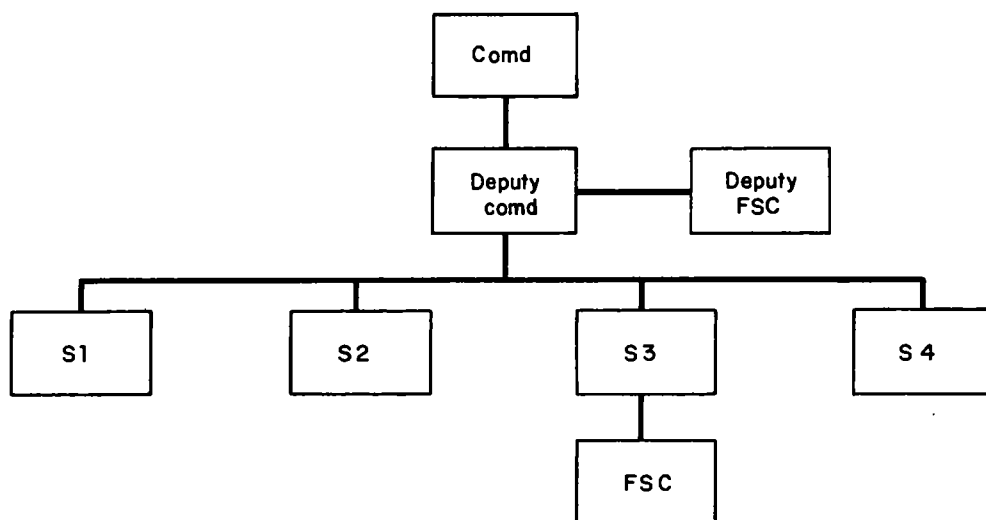


Figure 4. A type army artillery staff.

for the employment of artillery weapons and units.

b. Formulate plans and prepare operation orders for the commander's approval.

c. Keep the commander and staff informed with respect to training, combat efficiency, and disposition of artillery units.

d. Plan and supervise training and operations.

e. Coordinate with other staff officers on operations.

f. Prepare artillery fire plan.

g. Coordinate and integrate the artillery fire plan of lower echelons with each other and with the plan of operations

h. Provide current information of artillery fire capabilities.

i. Keep the S4 currently informed of ammunition requirements.

j. Recommend the assignment of units to subordinate commands.

k. Plan and supervise liaison activities.

l. Maintain current information of the friendly tactical situation at the fire direction center.

m. Inform the communication officer of all plans affecting signal communication requirements.

n. In cooperation with the artillery S2 of the next higher artillery headquarters, plan and supervise the work of intelligence personnel (in artillery units not authorized an intelligence officer).

o. Supervise the preparation of records and reports.

p. Exercise staff supervision over fire direction activities.

q. Inform the survey officer of all plans affecting survey requirements.

13. S4

The S4 of an artillery staff is responsible for the coordination and supervision of all logistical functions. Although all S4's perform the general duties outlined for the G4 in FM 101-5, there are differences according to their echelon in the scope of operations, and the assistance they receive in carrying out their responsibilities. The artillery battalion S4 has the

means at his disposal to procure and distribute supplies. If necessary, he can establish supply points. The artillery S4 above battalion level does not have the means to procure and distribute supplies, and is concerned primarily with coordination and supervision. In addition to procurement and distribution, the S4's duties are to—

a. Prepare and supervise the execution of a plan for the timely supply of artillery ammunition.

b. Keep the commander and staff informed of the ammunition status of the command.

c. Keep appropriate records of the artillery ammunition status, the location of ammunition offices and ammunition supply points, and the transportation available.

d. Keep current records of all traffic data and road nets.

e. Supervise all supply functions of the command to insure adequate procurement and proper distribution.

f. Keep records of critical items of supplies and equipment.

14. Liaison Officer

a. The artillery liaison officer is the artillery commander's representative at headquarters of the unit to which he is sent. He acts as fire support coordinator, in the absence of his commander, when working at the command post of the supported unit. He supervises the training of his liaison section.

b. Upon assignment and at each change in the mission of the supported or reinforced unit he should—

(1) Obtain all available information concerning the situation of his own unit and of the unit with which he maintains liaison.

(2) Understand the plan of prearranged fires.

(3) Know the location of registration points and meteorological (met) checkpoints.

(4) Know the status of ammunition.

(5) Know the amount of general support and reinforcing artillery available.

(6) Know the plan of observation to in-

clude, when appropriate, the assignments of forward observers.

- (7) Know his unit's plan for displacement.
- (8) Secure the necessary maps or air photographs.
- (9) Arrange with the artillery unit communication officer for signal communication and obtain necessary codes and ciphers.

c. Upon arrival at the command post of the unit of liaison, the liaison officer reports to the unit commander and informs him of the artillery plan, the location of the artillery, and the amount of artillery fire support available. He also establishes communication or checks the facilities already established.

d. During his tour of duty, the liaison officer—

- (1) Keeps the supported or reinforced unit commander informed of the artillery situation and capabilities. The liaison officer from the direct support artillery acts as his commander's representative, and as such is an adviser to the supported unit commander. The liaison officer from the reinforcing artillery unit advises the commander of the reinforced unit of the availability and capabilities of reinforcing fires.
- (2) Keeps his commander informed of the location and plans of the supported unit and of any changes in those plans.
- (3) Transmits requests for fires and for lifting fires.
- (4) Arranges for and insures a prompt exchange of enemy information.
- (5) Makes visits to his own command post, when conditions permit, reporting the situation and the effectiveness of the artillery support to his commander. During these visits he gives the executive officer any data appropriate for inclusion in the unit report.

e. Duties pertaining specifically to the liaison officer of the direct support artillery unit are to—

- (1) Act as fire support coordinator during the absence of his commander; prepare the fire support plan; act as ad-

viser on all matters pertaining to artillery support.

- (2) Accompany the supported unit commander on reconnaissance and remain with him at all times. When the unit he habitually supports is in reserve, the liaison officer usually remains with it.
- (3) Keep his commander informed of all patrols to include the number of personnel, time of starting, route, mission, return route, and expected time of return.
- (4) Coordinate the desired location of the no-fire line with the supported commander and report this information to his parent unit.

f. The liaison officer of the reinforcing artillery unit keeps his commander informed of the situation and of the reinforced unit's fire plan, and its plan of observation. In reporting the situation, he includes all available information, since he may be his commander's only or primary source of information of this type. He keeps the reinforced unit commander informed of the situation of the reinforcing artillery, including changes in capabilities and present or possible commitments, which may affect the reinforcing mission.

g. Even though artillery with a mission of general support has no inherent responsibility for establishing liaison, higher headquarters can modify this mission to include liaison. In this event, the liaison officer performs his duties as described in *a* and *b* above (FM 101-5). Frequently he must serve as a technical adviser to the commander of the unit of liaison and be prepared to recommend appropriate artillery tasks. This is particularly applicable to liaison officers from searchlight batteries, target acquisition battalions, 280-mm gun battalions, or missile units.

15. Communication Officer

The principal duties of the artillery communication officer are to—

a. Advise and assist the commander on signal communications matters.

b. Plan and recommend the communication system for the unit and supervise its installation and operation.

c. Obtain and distribute signal operation instructions (SOI) and standing signal instructions (SSI).

d. Prepare the prearranged message code and other authorized codes.

e. Advise and assist the S4 in the procurement of signal supplies.

f. Supervise communication training.

g. Recommend the location of key installations within the command post.

h. Supervise the maintenance of signal communication equipment in his and subordinate units.

i. Coordinate the use of existing and planned communication facilities with the communication officers of adjacent and supported units and with lower echelon artillery.

j. Advise the commander and staff of pertinent electronic countermeasures and anti-jamming techniques.

16. Reconnaissance and Survey Officer

The specific duties of the reconnaissance and survey officer include—

a. Prepare and execute a survey plan.

b. Obtain survey and control and carry it to lower echelon artillery.

c. Conduct reconnaissance for routes, position areas, and observation posts as directed.

d. Supervise survey training.

e. Plan continuously for future reconnaissance and extension of survey.

f. Work close with the S2 and the S3 in securing needed information on intelligence, target acquisition, observation, routes, and future position areas.

g. Exchange survey data and information with the survey officers of higher, lower, and adjacent units. This may require establishing of a survey information center (SIC).

h. Determine the accuracy of available maps.

17. Radar Officer

The duties of the radar officer are to—

a. Advise the commander and staff on all radar matters including coverage, electronic countermeasures, and antijamming techniques.

b. Advise and aid the S3 in organizing and supervising radar training.

c. Submit necessary reports and keep pertinent records.

d. Supervise radar maintenance.

e. Provide radar liaison with higher headquarters.

f. Advise and assist the S4 in procuring radar supplies.

g. Maintain appropriate clutter and coverage diagrams.

18. Chemical Officer

The battalion chemical officer is the principal adviser to the commander and his staff in all aspects of chemical, biological, and radiological (CBR) warfare. The chemical officer is responsible for the accomplishment of the following CBR functions in the battalion:

a. The preparation and conduct of the battalion CBR training program.

b. The training of the batteries CBR teams.

c. Implementing the plans for defense against CBR warfare.

d. The proper use of chemical munitions.

19. Chaplain

a. The Division Artillery Chaplain Section is located in Headquarters and Headquarters Battery, Division Artillery. The Division Artillery Chaplain is a member of the special staff of the commander. As such, he will operate in accordance with command staff relationships and doctrine outlined in FM 101-5. He will have direct access to the commander as required.

b. Chaplains assigned to the Division Artillery Chaplain Section normally will not be assigned or attached to units, but will provide religious coverage as required.

c. The duties of other artillery staff officers are given in FM 101-5.

20. Battalion Staffs

a. The battalion commander is provided with a staff to assist him in the exercise of command. The staff obtains appropriate information and furnishes required estimates and advice to the commander. The staff prepares the details of the battalion commander's plans, develops his decisions and plans into orders, and disseminates those orders to the command. Various members of the staff supervise the execution of

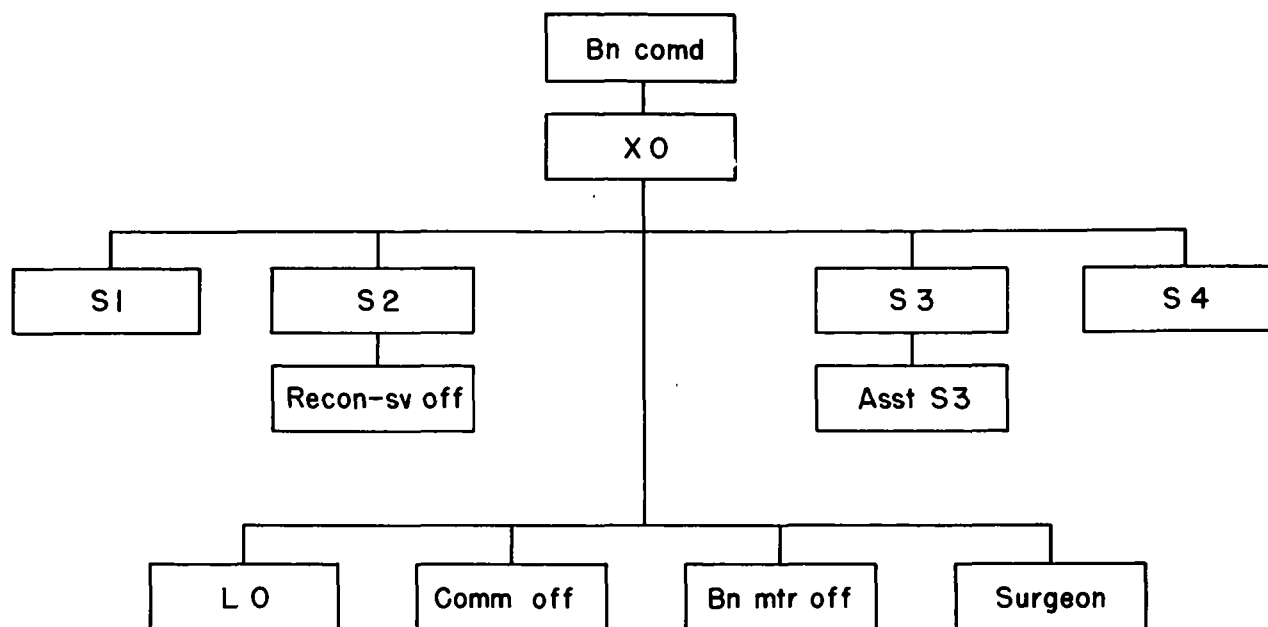


Figure 5. A type battalion staff.

plans and orders and take the action necessary to carry them out. The battalion staff must have a thorough knowledge of the commander's policies, and in areas for which no policy has been established, initiate action to establish command policy.

b. The organization of a battalion staff is based on the functions of the battalion commander. It follows the organization of other military staffs (FM 101-5). Within the limitations of the tables of organization, the staff organization and the assignment of functions to staff sections are the prerogatives of the battalion commander. Figure 5 shows a type battalion staff.

c. Staff officers have no command authority. Although they may formulate and transmit orders to the batteries, they do so only in the name of the battalion commander. The limits of their authority are determined by the battalion commander's policy. He is responsible for orders issued by members of his staff.

d. The staff officer, as chief of a staff section, supervises the personnel in his section.

e. Coordination is essential within the staff, between the staff and subordinate commanders, and with the staff of the next higher artillery headquarters, the supported units, and the reinforced units.

Section III. COMMAND POSTS

21. General

The command post (CP) is the artillery headquarters where the commander, assisted by his staff, exercises his administrative and tactical functions. The headquarters is often divided into forward and rear echelons; the forward echelon normally is the command post.

a. *Command Post.* Operations and intelligence are the principal staff functions con-

ducted at the battalion command post. Other staff functions contributing to intelligence and operations are reconnaissance, survey, communications, liaison, and logistics.

b. *Rear Echelon.* When the artillery headquarters is divided into two echelons, administrative details of the command are conducted at the rear echelon. The rear echelon of the battalion may be located with the division rear echelon.

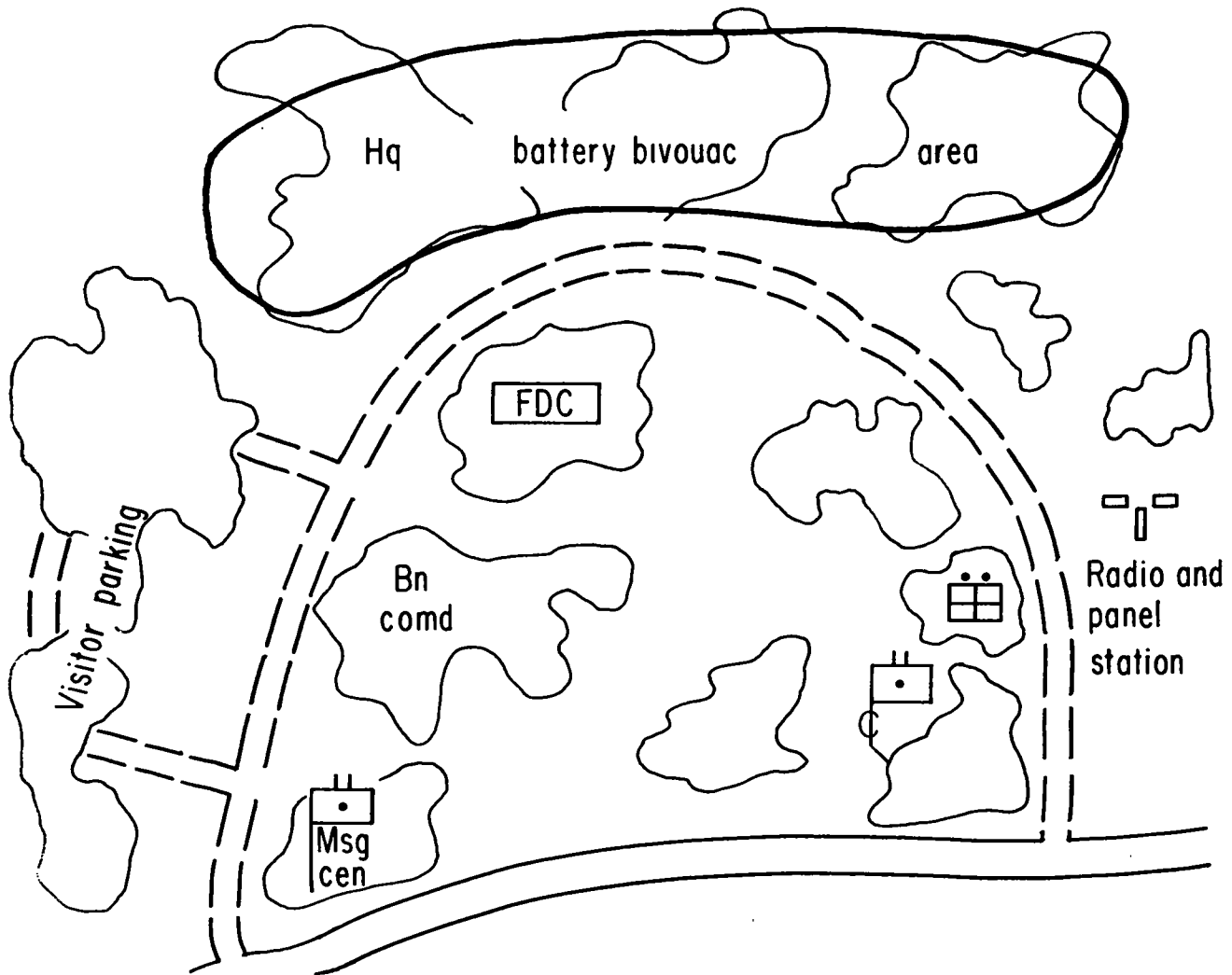


Figure 6. A type battalion command post area.

22. Command Post Area

a. General. The need for concealment, dispersion, reliable communications, access routes, and other tactical considerations influence the selection of a location for an artillery command post (CP). However, the most important factors influencing the CP selection are the requirements to exercise control of subordinate artillery, fire planning, and the ability to function, in an emergency, as a force command post. The fire direction center is usually located near the artillery headquarters battery or headquarters element. The element that coordinates fire support is usually located at the command

post of the force to establish the fire support coordination agency or to conduct necessary liaison on fire support matters.

b. Physical Layout of the Command Post.

- (1) The physical layout of the command post depends upon the space available, terrain, shelter, and policy of the commander. It is desirable to organize the tactical operations sections of the command post into two separate parts—one for fire direction functions and the other for operations planning and intelligence functions. To facilitate

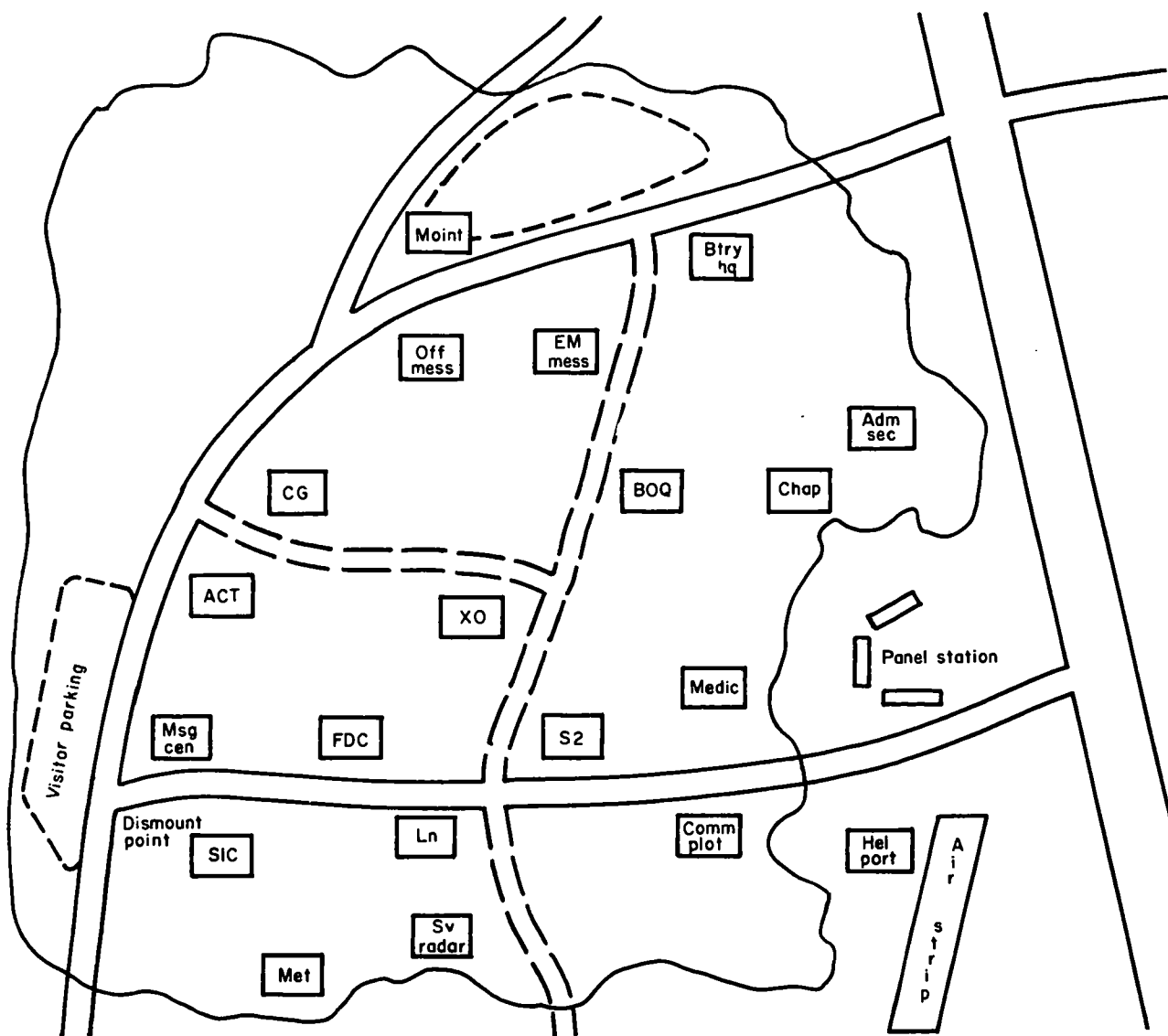


Figure 7. A type division artillery command post area.

- the coordination of these functions, the two parts should be so located that voice contact between them is feasible.
- (2) The fire control element should be located some distance from other command post elements. It should be easily accessible but not so near the CP entrance that it will attract casual visitors.
 - (3) The location of the other elements of the command post will be dictated by the situation. An installation should be provided near the CP entrance for the reception and information of visitors. Type command post layouts are shown in figures 6 and 7.



CHAPTER 3

ARTILLERY ORGANIZATIONS

Section I. UNITS

23. General

a. The organization of artillery units and headquarters is shown in detail in appropriate tables of organizations and equipment (TOE). The grouping of artillery units is flexible and is determined by the organization for combat (FM 6-20-1).

b. This chapter discusses the organizational requirements for artillery units and headquarters and their functions.

24. Classification

Units are classified as firing and nonfiring. The artillery fire unit is the missile or cannon battery or battalion. Nonfiring units include the headquarters and service batteries of battalions, searchlight batteries, and artillery target acquisition battalions and batteries.

25. Echelons

a. The battery is the smallest tactical and administrative unit of the artillery. The principal weapon of the firing battery is the cannon or missile (FM 6-20-1).

b. The artillery battalion is both a tactical and administrative unit. All battalions are self-sustaining. The number of firing batteries in a battalion is determined by the mission and structure set forth in the battalion table of organization and equipment.

c. The artillery group, division artillery, corps artillery, army artillery, army group, and theater artillery are described in FM 6-20-1.

26. Organizational Requirements, General

a. Artillery fire units are organized to deploy and employ a particular weapon system. The unit must be provided with—

- (1) The weapon.

- (2) A target acquisition capability.

- (3) A survey capability.

- (4) Communications.

- (5) Fire control.

- (6) Transport.

- (7) Logistics.

b. In addition, fire units require meteorological data which is furnished by division, corps, and army artillery headquarters.

c. Target acquisition capabilities are generally organic to light, medium, and heavy cannon units. Very heavy cannon units and missile units do not have organic target acquisition capabilities.

27. Organizational Requirements, Specific

Certain of the capabilities listed in paragraph 26 are found at either battery or battalion level.

a. The weapons (cannon or missile) are placed in the firing batteries of the battalions.

b. The artillery target acquisition facility, if organic to the unit, is located in the headquarters.

c. No battery has a survey capability. All capability is found in battalion and higher headquarters.

d. Communication facilities, both wire and radio, are required at all artillery echelons.

e. Fire control is exercised to a limited degree at battery level, enabling the battery to assume the battalion function or to operate separately for limited periods. The major fire control (fire direction) function is performed at battalion level (technical fire direction) and at higher headquarters (tactical fire direction), except in 280-mm gun battalions, Pershing battalions, and Sergeant battalions in which there is no technical fire control capability at battalion level.

f. All artillery units and most headquarters are 100 percent mobile.

g. Generally battery resupply is limited to class I and class V. On the other hand, battalions as self-sustaining units are capable of re-

supply of all classes of supply. Division and higher artillery headquarters are capable of sustaining only the headquarters and headquarters battery.

Section II. HEADQUARTERS

28. General

This section discusses the functions performed by artillery headquarters.

a. The artillery headquarters consists of the commander and key staff personnel.

b. The headquarters battery is commanded by the battery commander and its general mission (prescribed in section I of each TOE) is to provide the headquarters with the means for controlling tactically and administratively its subordinate units and to furnish mess, maintenance, and administrative facilities for the headquarters and headquarters battery.

29. Battalion Headquarters and Headquarters Battery

a. The typical cannon artillery battalion headquarters consists of the following elements (exceptions peculiar to missile units are noted in paragraph 27):

- (1) The battalion headquarters.
- (2) Battery headquarters.
- (3) Operation and fire direction section.
- (4) Target acquisition platoon.
 - (a) Ground observers.
 - (b) Survey section.
- (5) Liaison section.
 - (a) In divisional direct support battalions liaison is habitually established with the supported maneuver element and, if required, with the headquarters of the next lower echelon of the maneuver element.
 - (b) In other type battalions, one liaison element will operate according to the mission assigned by the next higher artillery headquarters.
- (6) Communications section. Wire, radio, messenger, and visual.

b. When the battalion does not contain a

separate service battery, the following elements must be included in the headquarters battery:

- (1) Personnel and administration section.
- (2) Ammunition train.
- (3) General supply element (to handle other than class V supply).
- (4) Vehicular, equipment, and materiel maintenance.
- (5) Air observers if not provided by augmentation.

30. Artillery Headquarters and Headquarters Battery at Echelons Higher Than Battalion

a. With the exception of ammunition and certain logistical elements (materiel maintenance and general supply), higher artillery headquarters and headquarters battery contains the same general elements as a battalion headquarters; however, the function of each element is broader in scope and requires additional personnel.

b. In addition to the elements described in *a* above, some of the higher artillery headquarters provide—

- (1) Personnel to perform fire support coordination in FSCC or TOC.
- (2) Meteorological data element.
- (3) Counterbattery and surveillance radar.
- (4) Army aviation.

31. The Howitzer (Gun) Battery

A complete discussion of the organization and employment of a howitzer (gun) battery is in FM 6-140.

32. The Service Battery

A complete discussion of the organization and operation of a service battery is in FM 6-140.

CHAPTER 4

CONDUCT OF OPERATIONS

Section I. POSITIONING ARTILLERY UNITS

33. General

This chapter covers the fundamentals of tactical operations of cannon artillery battalions; however, the same principles, with modification, will apply to artillery batteries (FM 6-140 and FM 6-61).

34. Methods

This discussion is concerned with divisional artillery battalions. There are four general methods of positioning artillery units (*a* through *d* below). However, the methods cited are also applicable to cannon and missile artillery batteries. Each of these four methods has many advantages and disadvantages. The value of a particular method depends on the type of unit, situation, mission, and enemy capabilities. There are also many variations, modifications, and combinations of these methods which the artillery commander may use to meet the requirements of each situation.

a. Method 1. In method 1, the battalion occupies a position area (fig. 8). The position area always includes the firing positions. Firing elements and headquarters and service elements are within the same perimeter. Firing elements are positioned and every feasible action is taken to insure that the time required to prepare for and fire a mission is kept at a minimum. Displacement of the firing elements or other elements of the battalion is made as required by the tactical situation. The battalion commander also selects or recommends (appropriate to his mission) alternate and supplementary positions to which the battalion or its elements can displace.

(1) The principal advantages of this method are as follows:

(a) The problems of command, administration, messing, survey, com-

munications, and local security are simplified.

- (b) The time required to resupply ammunition to firing sections is reduced.
 - (c) Reaction time, rate of fire, and reliability in meeting firing schedules are improved.
- (2) The principal disadvantages of this method are as follows:
- (a) Concentration of personnel, vehicles, and weapons in one area facilitates enemy detection.
 - (b) A single nuclear weapon could neutralize the entire battalion.
 - (c) Displacement of the entire battalion may be necessary if the position is discovered.
 - (d) Repeated firing of weapons from the same positions may disclose the battalion's location.

b. Method 2. In method 2, the battalion occupies a position area (fig. 9). The position area always includes the firing positions. In this instance, the firing element and headquarters and service elements are in separate perimeters. However, as in method 1, firing elements are positioned, and every thing possible is done to insure that the time required to prepare for and fire a mission is kept at a minimum. Displacement of the firing elements or other elements of the battalion is made as required by the tactical situation. The battalion commander also selects or recommends (appropriate to his mission) alternate and supplementary positions to which the battalion or its elements can displace.

(1) The advantages of method 2 are as follows:

(a) The location of firing elements and

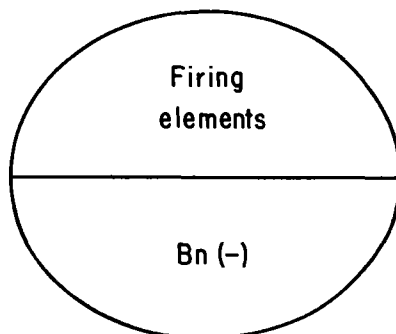
headquarters and service elements in separate perimeters make it more difficult for the enemy to neutralize the battalion with a single nuclear weapon.

- (b) Enemy action against one element of the battalion does not require displacement of the entire battalion.
- (c) The deployment of battalion ele-

ments in more than one area makes it more difficult for the enemy to locate the whole battalion.

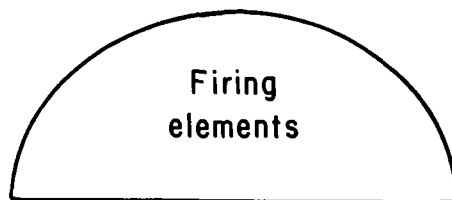
- (2) The principal disadvantages of method 2 are as follows:

- (a) Command, administration, survey, communications, and local security are more complex than in method 1.
- (b) The time and effort required for



Headquarters and service elements and firing elements in a common perimeter. This area includes the firing batteries of a missile or cannon battalion. The area includes firing positions. Alternate positions are not shown.

Figure 8. Battalion position area—method 1.



Headquarters and service elements and firing elements in separate perimeters. This area includes a firing battery of a missile or cannon battalion. Therefore, the number of these areas will depend on the type of unit (most cannon battalions require three). The area includes firing positions. Alternate positions are not shown.

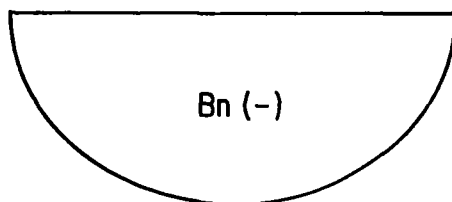


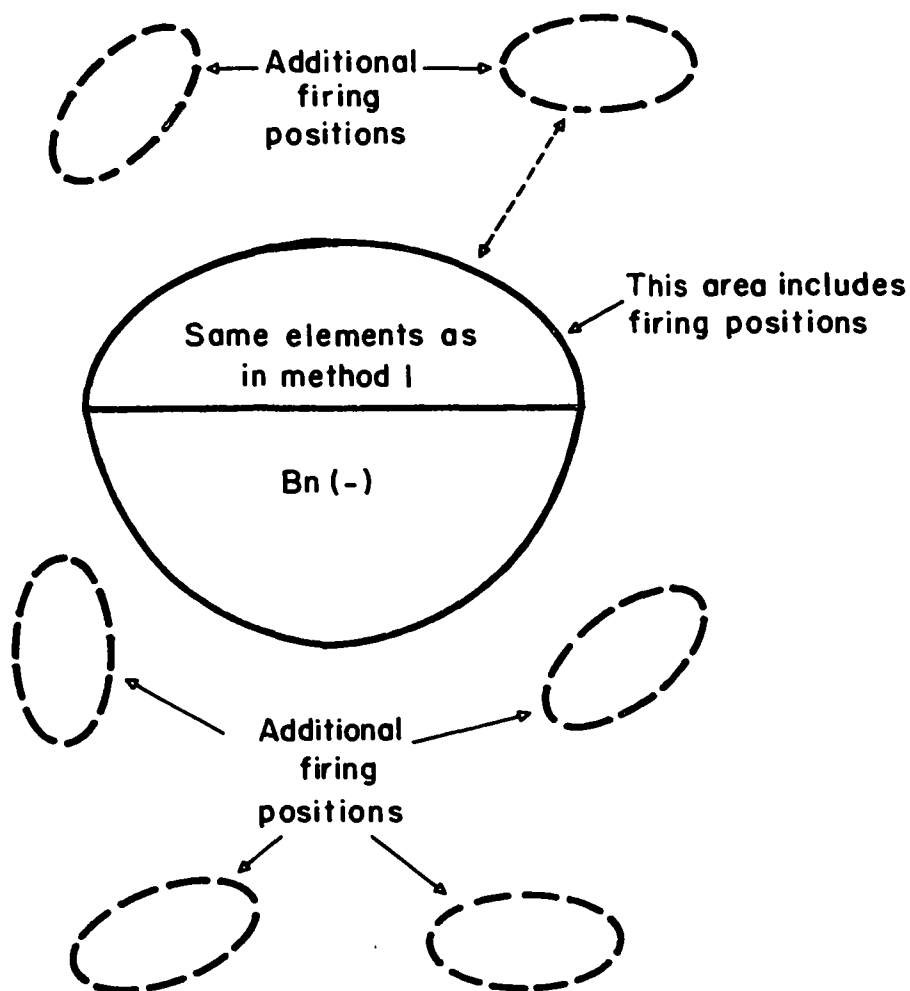
Figure 9. Battalion position area—method 2.

ammunition resupply to firing sections is greater than in method 1.

- (c) Repeated firing of weapons from the same position may disclose their location to the enemy.

c. *Method 3.* The battalion occupies a position area (fig. 10). When method 3 is used, the firing elements and the headquarters and service elements are within the same perimeter. Priority is given to the establishment of unoccupied firing positions outside the common

perimeter, which are selected to provide the desired fire capabilities. Time permitting, one of these additional firing positions is used for firing a mission. The firing element(s) occupies the position only long enough to complete the fire mission, then returns to the battalion position area. Firing positions in the battalion area are used only when conditions make it infeasible to fire the mission from another location. Firing elements are positioned and every possible action is taken to insure that a mini-



Headquarters and service elements and firing elements in common perimeter. Fire missions are normally accomplished from firing positions outside the perimeter; such positions are occupied only long enough to complete the fire mission. Alternate positions are not shown.

Figure 10. Battalion position area—method 3.

imum of time is used to prepare for and fire a mission from the battalion position area. Displacements, other than the movement of a firing element, are made as required by the tactical situation. The battalion commander also selects or recommends (appropriate to his mission) alternate and supplementary positions to which the battalion or its elements can displace.

(1) The principal advantages of method 3 are as follows:

- (a) Elements of the battalion are separated for relatively short periods of time, simplifying the problems of command, administration, messing, and local security.
- (b) Enemy detection of the firing positions does not disclose the location of the remainder of the battalion.
- (c) Displacement of a firing element(s) after firing reduces the possibility of its being damaged by counterbattery fire against its firing position.

(2) The principal disadvantages of method 3 are as follows:

- (a) Achieving the maximum rate of fire of the cannon artillery battalion is difficult.
- (b) A single nuclear weapon delivered on the battalion position area could neutralize the battalion.
- (c) Survey and communication are more difficult than in methods 1 and 2.
- (d) Firing elements may be detected during displacements.
- (e) Lack of suitable position areas, time, and routes may prevent the use of method 3.
- (f) The requirement to provide sustained fire may prevent the use of this method by cannon artillery battalions.
- (g) If the battalion is required to fire from positions within the common perimeter, all the disadvantages of method 1 accrue.

d. *Method 4.* The battalion occupies a position area (fig. 11). When method 4 is used, the firing elements and the headquarters and serv-

ice elements are in separate perimeters. One or more firing sections are located in each firing position. Unoccupied additional firing positions are selected as necessary to provide the desired fire capabilities. As in method 2, firing elements are initially located outside the headquarters and service perimeter(s); the principal difference between this method and method 2 is that the firing element(s) moves to another firing position as soon as a fire mission is completed. Firing sections are positioned and everything possible is done to insure that the time required to prepare for and fire a mission is kept to a minimum. Displacements, other than the movement of firing elements (as mentioned above) are made as required by the tactical situation. The battalion commander also selects and recommends (appropriate to his mission) alternate and supplementary positions to which the battalion or its elements can displace.

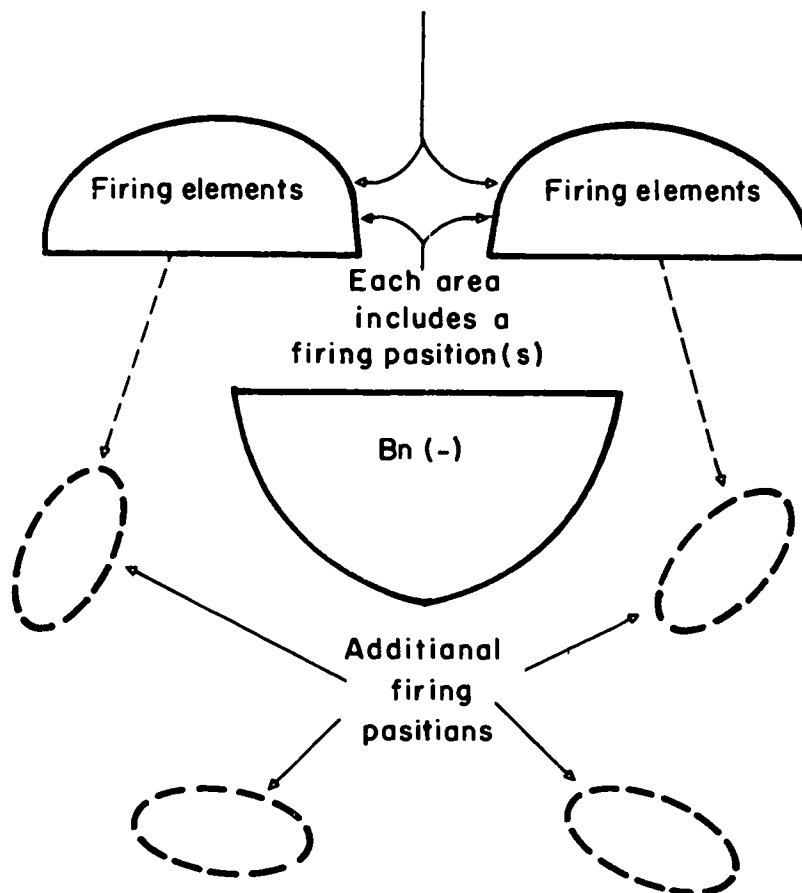
(1) The principal advantages of method 4 are as follows:

- (a) Dispersion of battalion elements provides the battalion with a high degree of passive defense against nuclear attack.
- (b) Detection and enemy counterbattery fires would probably require displacement of only the element under attack, allowing remaining elements to continue firing.
- (c) The dispersion of battalion elements makes enemy detection of the whole battalion more difficult.

(2) The principal disadvantages of method 4 are as follows:

- (a) Problems of command, administration, messing, and local security are more complicated than in the other methods.
- (b) Survey and communication are more difficult than in methods 1 and 2.
- (c) Achievement of the maximum rate of fire of the battalion is difficult.
- (d) Firing elements may be detected during displacements.
- (e) Lack of suitable position areas, time, and routes may prevent the use of this method.

Each of these areas includes one or more firing sections, and may include a battery. The number of these occupied areas can be varied to meet the needs of the unit.



Headquarters and service elements and firing elements in separate perimeters. Firing elements occupy another firing position on completion of a fire mission.

Figure 11. Battalion position area—method 4.

- (f) The requirement for providing sustained fire may prevent the use of this method.
- (g) Considerable time and effort is involved in ammunition resupply.

35. Locating and Displacing Elements

a. When any of the methods described in paragraph 34 are used, headquarters and service elements may be located together or separately, depending on the desires of the battalion

commander or on instructions from the division artillery commander.

b. The authority to order intrabattalion displacement of the type peculiar to methods 3 and 4 usually rests with the battalion commander. Authority to order displacements to alternate and supplementary positions is established in the inherent responsibilities of tactical missions (FM 6-20-1).

c. Units with a nuclear capability must keep FSE/FSCC informed of the location of all firing positions.

Section II. RECONNAISSANCE, SELECTION, AND OCCUPATION OF POSITION

36. General

The purpose of reconnaissance, selection, and occupation of position (RSOP) is to move the battalion from a position area, bivouac area, assembly area, or march column into a position from which it can deliver the fire required to accomplish its mission. Artillery reconnaissance is aggressive and continuous. It is planned and organized to be performed in a minimum length of time. Decentralization of effort is usually necessary in conducting a rapid and efficient reconnaissance.

37. Battalion Commander's Party

a. The battalion commander's party consists of the personnel and equipment needed to assist him in his reconnaissance, formulation of his plan, issuance of orders, and preparation for the occupation of position. The composition of the party will vary according to the type of battalion, mission, and restrictions on the number of vehicles if the battalion is operating in the forward area. It is desirable that the battalion commander take with him his S2, S3, communication officer, survey officer, and messenger. If possible and appropriate, he may take with him any or all of the following:

- (1) Radar officer or representative.
- (2) Battery commanders and their parties.
- (3) Survey section.
- (4) Communication chief.
- (5) Wire laying vehicles.
- (6) Train commander or train agent.
- (7) Battalion surgeon or medical representative.

b. In cannon battalions, it may be desirable to include one weapon and crew in the party to complete registration and set up the firing chart before arrival of the battalion. If there is no restriction or registration, this is particularly advantageous when the position is to be occupied at night and fires are to be delivered before daylight.

38. Battalion Position Areas

The term "battalion position area" is defined

as that area occupied by the battalion with its elements arranged for battle. Specifically, it is the area occupied by those elements of the battalion accomplishing the fire missions and for the security of the unit. Position areas given in orders, on maps, or on overlays indicate the area within which the weapons must be placed, but do not constitute a restraining line for all elements of the battalion; e.g., observation posts will usually be located at some distance from the position area, and the countermortar radar section will normally be outside the position area. Direct support artillery normally has position priority within the division area, and division artillery battalions normally have position priority over corps artillery units within the division area. In nuclear combat, first priority for positions must be given to nuclear capable artillery.

a. *Offense.* In the offense, cannon artillery positions should be selected well forward to support the attack and to avoid early displacement. When circumstances warrant, as in a coordinated attack, the battalion may occupy and organize the position without firing from it prior to the attack. Registration, interdiction, and harassing fires can be delivered from supplementary positions. All fires from the attack position may be withheld until after the preparation is fired or the attack starts. Missile artillery with a nonnuclear capability (Honest John, Little John, and Lacrosse) must be positioned so they can fire on targets of opportunity with a minimum of delay. The units will be positioned well forward in the division area. Their relative positions will depend upon their range and the disposition of enemy nuclear capable artillery.

b. *Defense.* In the defense, artillery positions should be echeloned in depth to provide flexibility of fire and to insure continuity of support in the event of an enemy penetration. All division cannon artillery should be capable of firing immediately in front of the forward edge of the battle area. Direct support artillery battalions should be able to provide close support for the forward companies and for the primary positions of the reserve companies of the

maneuver element being supported. Maximum utilization of range capabilities should be made from primary positions to provide longer range fires to the limit of ground observation from the combat outposts of the maneuver element. To provide longer range fires in front of the combat outpost line (COPL) and depth of fires within the battle area, forward and rear supplementary positions are necessary. Units with nuclear capability are positioned laterally and in depth to provide the most effective continuous support. Alternate positions should be selected and prepared. To delay the location of our primary positions by the enemy, supplementary positions may be used for registration, harassing, and interdiction fires.

39. Battery Position Area

The only indispensable requirement of a howitzer (gun) battery position or a missile firing position is that it be suited to the effective execution of the assigned fire missions (FM 6-140 and FM 6-61).

40. Observation Posts

Battalion observation posts, including forward observation posts, are selected to give the best possible coverage in width and in depth. The primary consideration in positioning observation posts is to insure complete observation over the battalion's entire zone of fire. To accomplish this every effort is made to position observation posts so that areas masked from one observation post can be seen from another. Available flank observation is used to overcome defilade. Other considerations are—

- a. Ease of installation and maintenance of communication.
- b. Ease of concealment of locations and routes of access.
- c. Ease of coordination with adjacent units to insure adequate coverage along boundaries of the supported unit's zone of action or sector of defense.
- d. Avoidance of outstanding landmarks (FM 6-140).

41. Countermortar Radar Positions

- a. The radar officer must advise the artillery commander on the location of the countermortar

radar position area. In designating a position area, the artillery commander assigns an area large enough to permit selection of the actual radar site based upon technical considerations affecting radar operations.

- b. The principal considerations governing the selection of a radar position area are proper coverage of the zone of action of the supported unit, technical capabilities and limitations of the radar set, and integration of the radar's zone of search within the zones of other units as directed by the highest artillery commander.

- c. In the offense, the radar position should be well forward to avoid early displacement. In the defense, the general location of the radar position may be prescribed by the higher artillery commander to provide depth to the radar operation of the force. The proximity of the radar position to the area of search is determined by the technical limitations of the equipment. Other considerations in the selection of the position area, such as security, cover, concealment, and ease of communication, are the same as for the selection of a battery position (FM 6-140).

- d. In selecting a position for the radar set, the mission of the section, the situation, the characteristics of the radar set, and the characteristics of enemy materiel are considered. A position is selected where the terrain best facilitates the operation of the radar set.

42. Ammunition Train

For position requirements of ammunition trains, see FM 6-61 and FM 6-140.

43. Release Point

A release point is that point on the route of march where the batteries will be released from battalion march control. Battery guides will meet the column at the release point and guide their batteries into the position. The release point should be located on the march route short of the position area and at a place where traffic can be controlled. Crossroads, defiles, or other locations subject to interdiction fire or traffic congestion must be avoided.

44. Steps in Reconnaissance, Selection, and Occupation of Position (RSOP)

- a. Placing a battalion in position involves

several tasks which are performed simultaneously or in sequence. Accomplishment of these tasks varies with the mission, time available, and the type of battalion. An armored artillery battalion, when operating as part of a task force, will frequently occupy positions, (often from march column) with little previous reconnaissance. In these cases, prompt opening of fire takes precedence over all other considerations. The airborne artillery must make its reconnaissance and selection of initial positions from photographs or maps. An airborne artillery commander has no opportunity to see or point out positions on the ground. Upon arrival in the drop or landing zone, the batteries must be prepared to go into action by piece, if necessary, consolidating and organizing the positions as the situation permits. A standing operating procedure (SOP) for the reconnaissance, selection, and occupation of position is necessary to expedite rapid and efficient emplacement of artillery. In all cases, the general principles apply, varying only in their application.

b. The procedures for an RSOP may include the following steps:

- (1) Receipt of orders.
- (2) Reconnaissance plan.
- (3) Conference with the supported or reinforced unit commander.
- (4) Reconnaissance for battery positions, observation posts, countermortar radar position (when appropriate), command post, aid station, routes into positions, and wire routes and selection of the actual locations on the ground for the elements of the battalion.
- (5) Formulation of a plan for occupation of the selected positions.
- (6) Issuance of orders to carry out the plan.
- (7) Preparation for occupation—survey, installation of communication, and route marking.
- (8) Movement of the battalion to the position area; occupation and organization of the positions.

45. Receipt of Orders

The battalion commander may receive an oral

or written order from his higher commander to occupy a position. If he must report to his higher commander to receive the order, the battalion commander is usually accompanied by his party.

46. Planning a Reconnaissance

Reconnaissance enables the battalion commander to make decisions on which to base his orders for the occupation. The assignment of reconnaissance missions to members of the battalion commander's party depends on the time available, the size of the area to be covered, the size of the party, and the personal desires of the battalion commander. In the following example of operations that may be performed by members of the party, the battalion commander may desire to make an initial reconnaissance of the battery positions and routes by means of aircraft.

<i>Reconnaissance or task</i>	<i>Performed by</i>
Selects the registration point and initial targets.	S3 and/or reconnaissance and survey officer.
Formulates the plan of observation including location of observation posts and areas of responsibility.	S2.
Formulates the survey plan	Reconnaissance and survey officer.
Selects position areas and routes.	Reconnaissance and survey officer, or S3 (Battery commanders, if available).
Formulates communication plan.	Communication officer.
Selects command post location.	Headquarters battery commander and/or communication officer.
Selects countermortar radar location.	Radar officer.
Selects aid station location	Headquarters battery commander and/or representative of the medical section.
Checks camouflage and security.	S2 and executive officer.
Selects release point	S3.

47. Conference with Supported or Reinforced Unit Commander

On receiving a direct support or reinforcing mission, the battalion commander establishes liaison with the supported or reinforced unit. If he has been assigned a position area by the

higher commander, reconnaissance for battery positions, observation posts, and other installations can be started at once. If he has not been assigned a definite position area, he may have to confer with the supported or reinforced unit commander before completing his reconnaissance. Usually, the battalion commander starts his reconnaissance and chooses tentative locations for various installations, making the final decision following his conference with the supported or reinforced unit commander.

48. Reconnaissance, Selection, and Occupation of Position from Rear Area

a. Action Prior to Leaving the Area. Before leaving the bivouac or assembly area, the battalion commander briefs the battalion executive and issues orders to expedite the occupation of the position. Depending upon his current information, he may issue orders concerning—

- (1) Movement of elements of headquarters battery, staff officers, and battery commanders and their parties to a location from which they can be brought forward quickly to receive the battalion order.
- (2) Probable routes, initial points, release points, time of movement, and the use of route markers.
- (3) Prearranged radio codes or messages by which to order the battalion forward.
- (4) Probable order of march of the batteries.

b. Instructions for the Reconnaissance. After receiving the higher commander's order, the battalion commander assembles his party, gives the situation, and issues instructions for the reconnaissance. He points out on the ground or on a map the battalion position area, possible observation posts, and the tentative locations for batteries and other installations. If he is to make a personal reconnaissance, he designates the place where he will issue the battalion order. If he assigns reconnaissance missions to members of his party, he designates the time and place at which the party will reassemble. He designates where he will meet the battery commanders. If the position is to be occupied immediately, instructions are sent to the bat-

talion executive officer to move the battalion forward.

c. Conducting the Reconnaissance. The battalion commander will seldom personally perform all the operations of reconnaissance. While the members of his party are performing their assigned reconnaissance duties, the battalion commander may contact the supported or reinforced unit commander or make a general terrain evaluation of the entire battalion area.

d. Orders for the Occupation.

- (1) Based on his reconnaissance, the reports of his staff, and the scheme of maneuver of the supported unit or the mission of the reinforced unit, the battalion commander completes his plan. He then issues his order to his staff and the battery commanders. Usually the order is issued orally, and in fragmentary form.
- (2) The battalion commander designates the release point in his order. A representative of the battalion commander is placed in charge of the release point until the arrival of the battalion executive.

e. Movement to the Position. The battalion executive alerts the battalion for the move. When directed, the battalion executive marches the battalion to the designated release point.

49. Reconnaissance, Selection, and Occupation of Position from March Formation

a. General. The occupation of a position from a march formation follows in general the procedure outlined in paragraph 48. Detailed planning prior to the march is essential, reconnaissance is limited, and more decentralized and hasty methods must be used.

b. Planning.

- (1) Planning should be performed with the supported or reinforced unit before the start of the march. From a map reconnaissance, possible successive position areas and observation posts are marked on maps or photographs. Identifiable terrain features and works of man that can be identified on the ground are marked with

numbers as control points. The direct support battalion marching in support of armor or mechanical infantry selects tentative positions from which designated phase lines, assembly areas, or other march control features can be supported. When in support of marching troops in a column, the direct support battalion may *leapfrog* batteries from position area to position area. Reinforcing battalions, in coordination with the reinforced unit, select positions along the axis of advance that will insure the accomplishment of their mission. Suitable positions for attached battalions are usually designated by the commander of the unit to which they are attached.

- (2) Prior planning is equally important for division artillery battalions, and missile batteries marching alone. The unit commander, basing his plan on his mission and knowledge of the situation, selects positions or assembly areas along his route which he may be required to occupy.

c. Preparation.

- (1) Command liaison is established immediately after the march warning order is received. Prior to the march, the forward observers, liaison officers, battery commanders, reconnaissance and survey officers, and the fire direction center personnel are furnished maps or photographs showing the locations of possible position areas, observation posts, and numbered concentrations. Forward observers and liaison officers with the artillery battalion rejoin their supported units. The order of march of the elements of the battalion should expedite entry into action.
- (2) The commander of an artillery battalion or a missile battery marching alone may direct his executive officer to march the unit to a selected area or release point near the position area.

d. Disposition of Elements During the March.

- (1) During the march, a battalion recon-

naissance party marches with the advance elements of the column. The reconnaissance and survey officer reconnoiters the position areas designated by the battalion commander and reports his findings. Such reconnaissance is not limited to these areas if other suitable areas are found. The battalion commander frequently uses an airplane or helicopter for command, reconnaissance, and security while on the march. Battery commanders and their parties may march at the head of the battalion. Figure 12 shows the disposition of the elements of an artillery battalion marching with and in direct support of infantry. Disposition of a direct support artillery battalion marching with an armored column is shown in figure 13.

- (2) Artillery commanders, accompanied by a reconnaissance party, usually precede their units when they are part of the march column of a supported unit. Depending on his mission and knowledge of the situation, the commander reconnoiters positions along the route as necessary. Frequently the commander's knowledge of the situation will allow him to proceed directly to the position area, select the positions, and order the unit into them.

e. Protection of the Column.

- (1) When the column is halted unexpectedly, supporting light artillery moves into positions from which it can support the head of the column if necessary.
- (2) Upon a request for fire, enemy ground action which stops the column, or other requirements for artillery fire, the battalion commander directs immediate occupation of position by at least one battery. The remainder of the battalion is kept moving forward until needed. If the fire of more than one battery is required, the battalion, or the required number of batteries, occupies the nearest available position

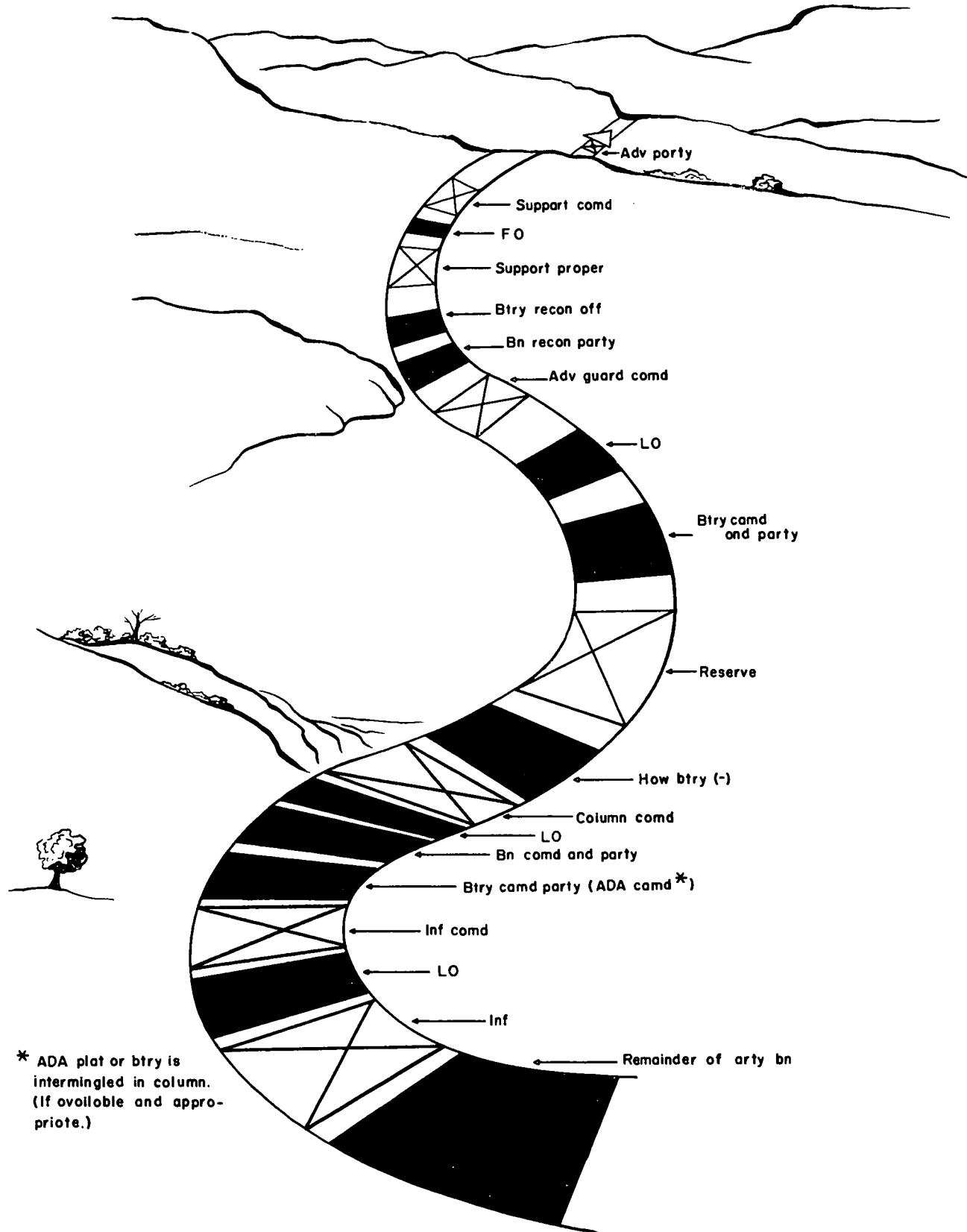


Figure 12. Artillery battalion marching with infantry.

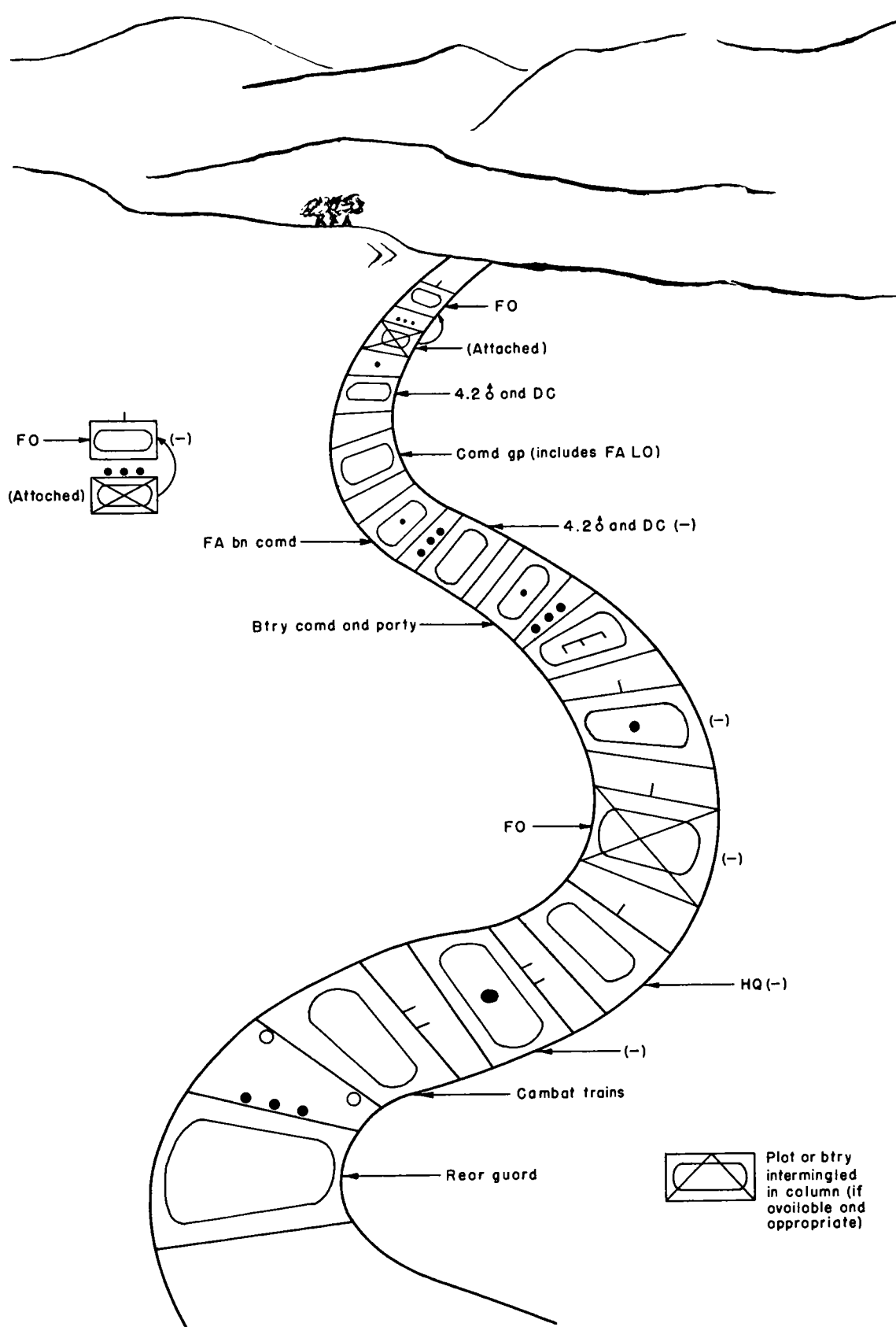


Figure 13. Artillery battalion marching with an armored column.

area from which the mission can be accomplished.

f. Occupation of Position. The battalion commander, a battalion staff officer, or the battery commanders make a reconnaissance of the position areas before the batteries arrive. The battalion commander continues the reconnaissance and issues the orders necessary to complete the occupation. The location of the command post is influenced by the choice of battery positions and the location, if known, of the command post of the supported unit. Radio is used for communication between the fire direction center and the batteries until wire circuits are completed. In addition, radio is used to communicate with liaison officers and forward observers until it appears that the battalion will be in

position long enough to warrant the laying of additional wire.

50. Preparation for a Night Occupation

For a night occupation of position, certain preparations are made during daylight. Wire lines are laid and properly identified. Selected positions and routes are plainly marked. If possible, chiefs of sections reconnoiter routes and positions to be occupied by the sections. Additional guides are provided for the movement into position. When fires are to be delivered before daylight, instrument locations and directions must be staked in on the target area base and the target area survey completed. If the situation permits, it is desirable to move one piece forward during daylight and register prior to the arrival of the battalion.

Section III. DISPLACEMENTS

51. General

Displacements normally include the reconnaissance, selection, and occupation of position. An artillery unit must be prepared to deliver continuous supporting fire. Movement must conform to the plan of the supported or reinforced unit. The movement may be deliberate, or it may be hasty; e.g., a fast moving attack. As in other types of RSOP, a standing operating procedure, a well-indexed terrain map, continuous fire planning, and liaison with the supported or reinforced unit are necessary.

a. Planning. Planning for displacement should be continuous. To insure continuous fire support during an attack or a retrograde movement, timely displacement is necessary. The method of displacement must insure available fire support at all times. When the battalion is displaced as a unit, the battalion commander arranges for the transfer of his fire responsibilities to another unit or units during the displacement. The time a unit is out of action for displacement should be held to a minimum. Maintenance of communications with liaison officers and forward observers and consideration of the terrain influence the distance and frequency of displacements. As a general rule, the distance of displacement should be at least one third the maximum range of the displacing pieces.

b. Reconnaissance and Selection of Position. The principles of reconnaissance and selection of positions for a displacement are in general, the same as for an initial occupation. The battalion commander should continuously reconnoiter in his zone for positions, observation posts, and routes to meet any requirement. Time permitting, survey control is carried forward or to the rear, and communication is installed prior to the displacement. Directional control may be brought into the battery area by means of traverse, astronomic observation, or the artillery gyro azimuth surveying instrument. It is desirable to have third order horizontal and vertical control in the firing position. In emergencies, firing position coordinates and altitude may be obtained from maps. Missile units (Pershing, Sergeant, Corporal, Lacrosse, Redstone, and Honest John) require more survey control at the firing position. Directional requirements are more stringent for missile units than for cannon, because of the missiles' longer range capabilities and because each missile launching is "fire for effect." Each missile system has a different accuracy requirement. In a forward displacement, the battalion commander usually makes the reconnaissance and selection of position. In a rearward displacement, the battalion executive, assisted by a reconnaissance party, may make the reconnais-

sance and selection of positions while the battalion commander remains with those elements of the battalion still in position or goes where the situation is most critical.

c. Routes. Air observers, liaison officers, forward observers, communication personnel, and survey parties habitually report on routes within the zone of advance. Route reconnaissance parties report on the number of route markers required, the strength and condition of bridges, and the presence of minefields. When the route of displacement is selected, the route reconnaissance party should be prepared to clear and mark routes through minefields. When two or more artillery battalions, not in a battalion group, displace over the same route, the next higher commander coordinates the movement. When artillery must displace over a route used by units of other arms, the force commander coordinates the movement. Except in nuclear combat, direct support artillery has priority on roads before other artillery.

52. Direct Support Battalions

a. General. A direct support battalion is displaced on the initiative of the battalion commander. Displacement is dictated by the scheme of maneuver of the supported unit. Continuous fire support must be maintained. When displacement is necessary, the battalion commander coordinates his movements with the action of the supported unit and notifies the higher artillery commander, giving the method of displacement, the time displacement will begin, the expected time of completion, and the location of the new position area.

b. Method. A direct support battalion may displace by one of three methods, depending on the time available, scheme of maneuver of the supported unit, presence of reinforcing artillery, traffic conditions, and enemy activity.

- (1) When reinforcing artillery is present or an arrangement can be made for other artillery to take over the direct support fire missions, the battalion may move as a unit.
- (2) Displacement may be by echelon, moving one firing battery and a portion of headquarters battery (unit SOP)

in one echelon and the remainder of the battalion in the other.

- (3) The battalion may displace one battery at a time.

c. Procedures.

- (1) When the battalion displaces by echelon, close coordination between the battalion commander and the battalion executive is essential. The battalion commander remains at the forward position to supervise the occupation of position. The battalion executive remains with the battalion and supervises the movement from the old position. When one echelon is in the forward position and ready to fire, the battalion commander or his representative calls the next element forward by prearranged code. If the situation requires that the battalion commander remain with the supported unit commander, the battalion executive officer supervises the displacement.
- (2) When the battalion displaces as a unit, the procedure is essentially the same as for an initial occupation of position.

d. Displacement of the Command Post.

- (1) There should be no interruption in the operation of the fire direction center when the battalion displaces by battery or by echelon. Continuous communication is maintained with the supported unit, reinforcing artillery, and higher artillery headquarters. Consequently the fire direction center is displaced by echelon so that continuous massed fire support can be maintained.
- (2) Every effort should be made to establish communication between the advanced command post and the supported unit prior to the displacement of the battalion; however, the lack of this communication should not delay the displacement.

53. Displacement of General Support Battalions

a. General support battalions usually displace as a unit; however, if the situation demands, displacement may be by any of the

methods outlined for direct support battalions (par. 52). Although general support battalions displace only on order or authority of the higher artillery headquarters, the battalion commander is responsible for a continuous study of the situation and for recommendations to the higher artillery commander when displacement is necessary. He should be prepared to advise the higher commander as to the positions, routes, and time of displacement.

b. When the general support battalion has a general support-reinforcing mission, displacement must be coordinated with the next higher artillery headquarters and the reinforced unit. In selecting positions and time for displacement for recommendation to the higher commander,

the battalion commander must consider all elements outlined in his mission. General support missions may be assigned to other units by the higher artillery commander while displacement is in progress.

54. Displacement of Reinforcing Battalions

When an artillery battalion has only the mission of reinforcing the fires of another unit, it displaces upon request of the reinforced unit commander or on order of the next higher headquarters. The reinforcing unit is responsible that the next higher headquarters is notified of the method of displacement, the time the displacement is started and the time completed, and the area to which the reinforcing battalion is displaced.

Section IV. ARTILLERY MARCHES AND BIVOUAC

55. References

The basic doctrine governing troop movement is presented in FM 100-5. For technical and logistical data pertaining to troop movements, see FM 101-10. For a detailed discussion of motor movements, see FM 6-140 and FM 25-10.

56. Types of Marches

a. *General.* The type of march selected for an artillery battalion is determined by the—

- (1) Mission of the unit.
- (2) Visibility.
- (3) Condition of the roads.
- (4) Traffic conditions.
- (5) Available road net.
- (6) Enemy air activity.
- (7) Location of the enemy.

b. *Infiltration.* In infiltration, vehicles of the unit are dispatched individually or in small groups at intervals. This type of march is least vulnerable to hostile observation and attack. An infiltration march interferes least with other traffic; however, it has the disadvantage of greater column time length and difficult column control.

c. *Close Column.* In a close column, the march unit is formed as compactly as possible

consistent with driving safety. The time interval between the tail of one march unit and the head of the next is usually 5 minutes. The advantages of a close column are ease of control and reduction of column time length. The disadvantages are that the close column is extremely vulnerable to enemy attack and that the strength and nature of the column are readily apparent to enemy observers.

d. *Open Column.* An open column is the usual march column. The distance between vehicles which is prescribed by the column commander, is generally 100 to 150 meters. The time interval between march units is the same as in the closed column. The advantages of this type of column are reduced driver fatigue, better vision on dusty roads, ease in passing individual vehicles and dispersion as a passive defense against air attack. The major disadvantages are the greater column time length and the increased difficulty in control as compared with a close column.

57. Preparation for the March

a. *Orders.* The amount of detail given in a march order depends on the tactical and traffic situation and the state of training of the command. Many details may be included in the standing operating procedure and need not be included in an order. The order may be supplemented by strip maps, circulation maps, route

sketches, and march tables. Each march unit commander and each driver should be furnished a map or sketch of the route, if available. The principal items that should be included in a march order are the—

- (1) Situation.
- (2) Mission and destination.
- (3) Organization for the march, showing the order of march, composition, and commander of each serial, march unit, and special detail.
- (4) Instructions of air observers; to security detachments; to reconnaissance, pioneer, and quartering parties; and to route marking and traffic control groups to include place and time of departure, mission, special instructions, and method of communication with, and the time of rejoining, the main body.
- (5) Instructions to the main body, to include the initial point, control points, and the release point; times that march units arrive at and clear these points; rate of march; and route or routes of march.
- (6) General instructions, such as restrictions on use of roads, maximum speed of march units and individual vehicles, alternate routes and detours, restrictions on lights, halts, precautions during halts, special instructions regarding march discipline, and instructions regarding defense against air or ground attack.
- (7) Communication instructions, such as the use of radio, messengers, and whistle or horn signals, and communication instructions pertaining to the opening and closing of command posts.

b. Route Reconnaissance. Route reconnaissance may be performed from maps or air photographs, from aircraft, or by actual inspection of the route. Reconnaissance by one of these means should precede every march. Map or aerial reconnaissance should, whenever possible, be followed by ground reconnaissance. An actual ground reconnaissance is necessary for the Redstone, Corporal, Sergeant and 280-mm gun units. The units have numerous vehicles of

limited maneuverability, large size, and heavy weight which require a complete and thorough reconnaissance of the route. The purpose of route reconnaissance is to determine—

- (1) The most suitable route consistent with terrain and possible enemy action.
- (2) Alternate routes.
- (3) Available cover and concealment.
- (4) Road conditions, including surfacing, grades, fords, bridges, underpasses, and tunnels.
- (5) Location of minefields, road blocks, defiles, contaminated areas, or other obstacles and detours to avoid them.
- (6) Condition, capacity, and size of bridges, underpasses, and tunnels.
- (7) Sites for halts, bivouacs, and assembly areas.
- (8) Plans for route marking and pioneer work.
- (9) Time required to make the march.

c. Quartering Party. The purpose of a quartering party is to arrange for the local procurement of necessary supplies or services and shelter, if available, and to locate and lay out bivouac areas prior to the arrival of the column. The quartering party may be used for perform route reconnaissance and pioneer work and to prepare plans for the defense of the area.

58. Conduct of the March

a. General.

- (1) Complete and constant supervision by officer and noncommissioned officers is essential to good march discipline. Officers and noncommissioned officers ride where they can best supervise the march of their units. The senior officer or noncommissioned officer commands the vehicle in which he is riding and is responsible that all orders concerning the march are carried out. He usually rides beside the driver. Commanders and other specifically designated personnel may pass the column for supervision. All other personnel should be prohibited from passing the column except at scheduled halts.

- (2) Aircraft in communication with control vehicles may frequently be used for control of the march column.
- (3) The vehicle commander must remain awake and alert. His duties are to watch the route for signs, markers, traffic signals, and other traffic. He must keep the driver alert. Relief drivers may sleep in the body of the vehicle.
- (4) Vehicles stay well to the side of the road on two-lane roads. Due to greater weight, length, and width of some heavier artillery, two-way traffic on narrow roads is impracticable. Serials containing these weapons may have to be routed over other routes, or road blocks may be set up to prohibit two-way traffic. Warning devices or signs must be displayed on oversized vehicles which require more than one-half of the width of the road.

b. Route Marking. The route marking detail marks the route with signs and/or personnel to insure that the column arrives at its proper destination without delay. Individuals are not posted where signs are equally effective. When necessary for security, route marking personnel are posted in pairs. They are posted at dangerous road intersections, railroad crossings, and wherever obstacles and mined or contaminated areas require cautious driving. When the route marking party is formed, individuals are given general instructions in their duties. When they are posted, they are given specific instructions applying to their particular post. Duties of a route marker are comparable to those of a sentry. A check must be made to insure that all route marking personnel are picked up promptly and returned to their organizations after the march. For details concerning route marking and traffic control, see FM 25-10.

c. March Discipline. March discipline is the observance and enforcement of the rules that govern a unit on the march, particularly those involving correct formations, distances, speeds, and effective use of cover. This discipline is acquired through training and experience in marching. Vehicle movements require a high degree of individual training and march discipline. Since march control is difficult, much of

the responsibility for a successful march rests with subordinate commanders.

59. Artillery with Security Detachments

a. When contact with the enemy is an actuality or is expected, tactical conditions govern the disposition of march elements. Dispositions are made to provide security and to facilitate entry into action. Usually, light artillery will be the only artillery included in security detachments. Self-propelled artillery is most desirable in support of security forces.

b. As a general rule the artillery supporting a security detachment moves by bounds if the detachment is dismounted or as a part of the column if the detachment is motorized.

60. Advance Guard

a. General. Artillery must give close and continuous support to the advance guard. The size and mission of the advance guard and the terrain and enemy capabilities are factors in determining the amount, type, and location of the supporting artillery.

b. Strength and Disposition. If the advance guard is an infantry company, artillery is usually not attached. A battery from the artillery with the main body marches in support of the advance guard, usually between the main body and the advance guard. Light artillery reinforced with medium artillery, should be *attached* to larger advance guards operating at distance(s) beyond the range of artillery marching with the main body. Liaison with the advance guard commander is established by the artillery.

c. Positions.

- (1) Planning for locating positions is essential. Reconnaissance elements must be well forward in a march column to enable the artillery to occupy positions promptly in support of the advance guard action. Artillery with the advance guard must not occupy positions prematurely; however, once committed, it must go into action rapidly. Communication will be by radio initially. Observed firing charts constructed on a map or grid sheet will be used initially.

- (2) When contact is imminent and the advance guard has deployed, the supporting artillery moves by bounds from one firing position to another. When more than one battery is in support of the advance guard, the artillery moves by bounds by echelon with one echelon moving forward while the other is in position ready to fire.

61. Rear Guard

a. Strength. The mission of a rear guard requires light and medium artillery support. The rear guard of a division requires at least a battalion of light artillery and a battery of medium artillery. Self-propelled artillery is desirable. When large units are involved, the rear guard artillery may be reinforced by corps artillery. If the distance between the rear guard and the main body is excessive, the artillery may be *attached* to the rear guard.

b. Dispositions. Rear guard artillery usually marches by bounds in the interval between the rear guard and main body. The commander of the rear guard artillery marches with the rear guard commander. The ammunition train of the rear guard artillery also marches in the interval between the rear guard artillery and the main body.

c. Positions. The principles governing the selection of artillery positions for rear guard actions are the same as those for advance guard actions.

62. Flank Guard

Artillery is *attached* to the flank guard only when distance prohibits the support of the flank guard by artillery with the main body. The amount of artillery in support of a flank guard, as well as its employment, is similar to that in support of an advance guard.

63. March Outposts

When a column halts, the security detachments organize march outposts. Normally the artillery will not occupy positions for short halts. For long halts, or if the column is bivouacking for the night, the artillery occupies positions. For security in bivouac, see FM 6-140.

64. Halts and Bivouacs

a. Halts. Halts are made at regular intervals or at selected sites to rest the men, service the vehicles, and check the loads. Usually, a halt of 15 minutes is made at the end of the first 45 minutes of marching. Subsequent halts of shorter duration are made at the end of longer intervals. Halts for feeding and refueling are usually from 45 minutes to 1 hour in duration. During active operations, wooded areas and winding roads offer the best halting places, since they provide concealment and do not present a straight line for attack by enemy aircraft. Halts should be made where vehicles may be dispersed off the road. Crossroads, railroads, and other similar places should be avoided, and no part of the column should stop on steep grades or bridges. Relief of personnel must be considered in selecting a place to halt. Villages and towns should be avoided. Columns should be halted to provide 200 meters of clear view for approaching traffic at both ends of the column.

b. Bivouacs. When groups rest under shelter tents or improvised shelter, or on the ground with no overhead cover, they are said to be in bivouac. Troops are placed in bivouac only when required by the tactical situation or when better shelter is not available. The selection of areas is preceded by a reconnaissance for routes and suitable locations. As far as the tactical situation permits, security, supply, sanitation, and the comfort of the troops govern the selection of bivouac areas. Drainage, accessibility, water supply, and protection from weather are important considerations. Areas selected are usually designated in the march order. A quartermaster party should precede the column to the bivouac area.

65. Types of Halts

a. Short Halts. In areas where there is little danger of enemy air attack, the vehicles may close on the leading vehicle to facilitate servicing and inspection. In the combat zone, vehicles are halted in concealment when possible. If no concealment is available, vehicles are widely dispersed to make them unprofitable targets for enemy aircraft. In halting, vehicles should stop as far to the right as possible. In areas recently occupied by the enemy, vehicles

remain on the traveled surface until a search for mines is made. Troops remain off the road to the right of their assigned vehicles, staying clear of the traveled portion of the road at all times. When parked off the road, vehicles are headed in the direction of the movement. During halts, drivers and assistant drivers perform the prescribed inspections and maintenance (FM 25-10). Men are posted to control traffic. Security measures for short halts are the same as for marches.

b. Long Halts. When a battalion makes a long halt during a march, it is usually placed in

an assembly or bivouac area. Security measures for bivouacs are applicable to long halts.

66. Sanitation

During short halts, sanitation is a minor problem. Refuse and trash should be buried as a security measure and to avoid contaminating the area. During long halts or in bivouac, latrines and garbage pits are constructed immediately. Areas are kept clean, and refuse and garbage are burned or buried. When the troops evacuate the area, all fires are extinguished, the site is thoroughly cleaned, and the latrines and garbage pits filled and marked.

Section V. SECURITY

67. General

a. Artillery units may be attacked by—

- (1) *Counterbattery.* Friendly artillery may be attacked by hostile cannon, mortar, rocket, or missile fires.
- (2) *Air.* Artillery may be attacked by bombers, fighter bombers, or fighter aircraft. These aircraft may employ machineguns, heavy demolition bombs, small antipersonnel bombs, fire and chemical bombs, and rockets of various sizes, as well as nuclear weapons. Since there is no organic air defense artillery in the division, the division relies primarily on friendly tactical air or attached air defense artillery for active air defense. Passive air defense must be exercised continually.
- (3) *Ground.* Artillery units may be attacked by hostile ground troops, guerrillas, or partisans while in position or while on the march. Security of artillery units against ground attack becomes more critical as a result of gaps caused by the dispersion between units. Particular emphasis is given to the security of nuclear weapons and materiel. Each artillery unit, in coordination with adjacent units, is responsible for its own local security. Nuclear delivery units may receive additional security troops. During nuclear warfare, the wide dispersion

between units may require that artillery units achieve security by selecting positions close to the supported unit. Individual launcher units may be required to select hide positions within the perimeter of units close to their firing positions.

- (4) *Combination.* Artillery is of such prime importance in the success of a mission that the enemy may employ counterbattery, air, or ground attack or any combination of these to destroy or neutralize friendly artillery. The artillery commander is responsible for the security of his unit; protection of his organization and success in its defense permits the accomplishment of the artillery mission. In selecting positions that will enable them to accomplish their mission, commanders must consider the defensibility of each particular area and be prepared to counter any method of hostile attack. Defilade, cover, concealment, size, relative location of the area, and terrain suitable for security observation posts influence the selection of the position. Consideration is also given to avenues of approach, natural obstacles, fields of fire, and routes of communication. An integrated battalion area is highly desirable, but the first security requirement is the selection of defensible battery positions from

which to accomplish the mission. Defensive measures under a nuclear threat are flexibility, dispersion, and preparation of additional position areas.

b. The tactical aspects of the defense must be centered at the battery with close coordination of defensive measures by battalion whenever practicable. Individual battery defenses are integrated into a battalion defense by the battalion executive officer who is normally the battalion security officer. Emphasis is placed on—

- (1) Training in security discipline.
- (2) Camouflage, cover, and concealment.
- (3) Dispersion of the elements of the command.
- (4) Proper location of weapons.
- (5) Mutual support between batteries, if practicable.
- (6) Timely and adequate warning.
- (7) Preparation of plans of action which can be executed immediately to cover all enemy capabilities.

c. The duties of the battalion security officers are to—

- (1) Coordinate the defense preparations of the battalion and with adjacent units.
- (2) Supervise the battalion warning system.
- (3) Form the battalion reserve.
- (4) Formulate counterattack plans.
- (5) Arrange for mutual fire support between batteries.
- (6) Conduct rehearsals of the battalion defense plans.
- (7) Supervise the continuous improvement of the battalion defensive positions.
- (8) Integrate available air defense weapons into the battalion defense plan according to their assigned mission.

68. General Defensive Measures Available to Artillery

a. *General.* Defensive measures available to artillery are classified as either passive or

active. An adequate warning system is essential to both.

b. *Passive Security Measures.* Passive security measures are those taken to avoid detection and subsequent enemy action and, in the event of attack, to minimize the enemy's effectiveness. These include—

- (1) Camouflage, cover, and concealment to obtain complete protection from enemy observation or to mislead or misrepresent the true identity of the installation.
- (2) Dispersion of pieces, vehicles, and installations so as not to offer the enemy a concentrated target. Dispersion within a given position must be consistent with the accomplishment of the mission and defensibility of the area.
- (3) Field fortifications, including weapon emplacements, foxholes, and trenches for personnel and revetments for equipment and ammunition. The situation and material available determine whether overhead cover will be provided for personnel and ammunition.
- (4) Natural obstacles should be improved and artificial obstacles should be constructed. These obstacles include anti-tank and antipersonnel mines, barbed wire, and boobytraps.
- (5) Adequate warning system to include ground and air observers, communications, and trip flares.
- (6) Adequate warning system for friendly nuclear strikes.
- (7) Dummy positions to attract attention away from the operating installation. These should not be so obvious as to be unrealistic. Frequently, pieces may be fired from dummy positions.
- (8) Alternate battery positions from which missions can be continued with little delay, if the primary positions become untenable. Registrations from alternate positions conceal the main battery position.

c. *Active Security Measures.* Active security

measures include the use of all available battalion weapons and personnel to defeat the enemy. Small arms fire and the direct fires of the howitzers enable the battalion to defend itself against minor ground attacks. Defensive fires are coordinated to delay, confuse, blind, and render ineffective any attacking ground forces. All personnel must be sufficiently trained in infantry small unit tactics to successfully attack and destroy small enemy parties near the position area. Troops fire on hostile aircraft only on command or prearranged signal. Normally hostile planes are taken under fire only in the event of direct attack or hostile act. For further discussion of active security measures see FM 6-140.

69. Security Organization

a. General. The position consists of the defended areas screened by a series of outposts. The defended area contains the weapon positions, command post, truck park, and service area; it is as compact as circumstances permit. The outposts form a protective screen, acting as detection and warning agencies. Essential elements of a coordinated all-around defense include—

- (1) Location of all organic small arms to provide a continuous band of grazing fire around the perimeter.
- (2) Emplacements for rocket launchers to cover probable avenues of approach by armored units which cannot be covered by direct fire.
- (3) When appropriate, recommendations of the air defense artillery commander as to defense against air attack.
- (4) Assignment of definite defense positions to all personnel.
- (5) Establishment of an effective day and night detection and warning system.
- (6) Establishment of telephone communication with outposts.

b. Defended Area. The light and medium artillery howitzer (gun) sections, as the nucleus of the defense of an artillery area, are located to facilitate the accomplishment of the unit mission and mutual support for close defense. The weapon sections are integrated into

the defense plan by assignment of primary and secondary sectors of responsibility to each section (fig. 14), preparation of the firing position for complete cannon fire coverage of the position perimeter, and development of fire plans to cover all possible avenues of approach.

c. Outposts. An efficient warning system is provided primarily by outposts. During daylight hours, the outposts, consisting of security observation posts and rocket launcher teams are situated to cover all approaches to the battery. At night, these outposts may be pulled in to form a tight perimeter. For these outposts to be effective, communications must be established to transmit timely warnings and information. Outposts must be carefully briefed on the location of friendly units and advised of necessary movements of friendly personnel, such as messengers and wire crewmen. Observation and early warning are further supplemented by the use of army aviation.

70. Procedures

To insure an efficient defense, certain practices are included in each unit's standing operating procedure. Machineguns must be mutually supporting; sectors of fire must be assigned and stakes set to indicate the final protective fires. Friendly troops, who may be affected, must be warned of impending close-in cannon fires or long-range automatic weapons fire. Periodic reports are required of all outposts, and unmistakable warning signals are prescribed. Mandatory precautions include prohibiting all civilians access to the position area and definite recognition of all friendly personnel before granting them entry to the area.

71. Organization of Position

a. Initial Preparation. Machineguns and rocket launchers are brought forward with the advance party to insure adequate defense of the area during the critical period while each battery is moving into position. The remaining auxiliary weapons are emplaced for defense, camouflage measures are initiated, and coordination of local security is commenced.

b. Improvement of Position. Improvement of the position area is continuous. Fortifications and camouflage should be constructed as

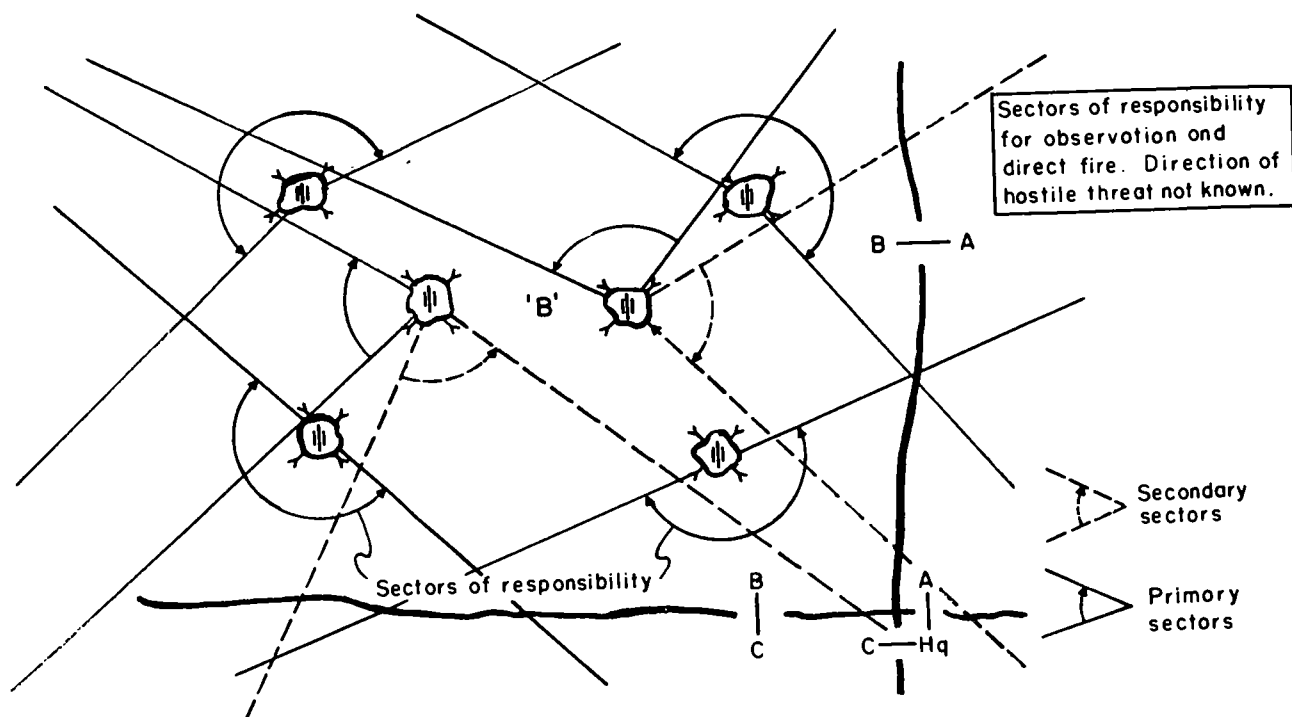


Figure 14. A type battery defense (schematic diagram).

though the unit would remain in position for several weeks. In improving the position, the following must be taken into consideration:

- (1) Early delivery of supporting fires.
- (2) Emplacements for weapons and protective measures for personnel and equipment.
- (3) Defense against ground and air attack.
- (4) Temporary firing positions for close defense.
- (5) Protection of ammunition.
- (6) Camouflage measures to supplement natural concealment.
- (7) Dummy and alternate position areas.
- (8) Wire communication with the outposts.

c. Night Operations. At night and when observation is limited, certain other precautions are necessary. Reserve ammunition for night use must be distributed prior to darkness; trip flares, boobytraps, and antipersonnel mines must be armed; correct use of the challenge and reply must be required; and section sentries

must be posted. Night movement within the area must be kept to a minimum. Fire of automatic weapons must be closely controlled to prevent detection. Sound and light discipline must be maintained. All vehicles possible are brought within the perimeter at night. At dawn, night restrictions are lifted.

72. Displacement Security

a. General. Artillery is particularly vulnerable to enemy air and ground action during movements. This vulnerability increases when the artillery is entering or leaving a position and when it is confined to a road as in passing through defiles, over bridges, or other places where the terrain restricts dispersion. The commander, in planning the defense of his displacing column, must consider the enemy's tactics, the terrain, the weather, and the current situation. A night move should be considered unless restricted by higher headquarters.

b. March Security. The commander reconnoiters the route to be followed, paying particular attention to localities favoring ambush and areas which may be under enemy ground

observation. While on reconnaissance, the commander contacts friendly units along the route and makes arrangements for communications and on-call assistance. When ground attack is possible, the column should be closed and speed increased to facilitate control, minimize the area to be defended, and expedite the assembly and retaliatory action. To provide overall protection, organic automatic weapons are equally spaced throughout the column. All personnel should be prepared for immediate combat. When an air attack is expected, the terrain, the number and type of attacking aircraft, and the type of unit under attack govern the action to be taken. This may be either to halt the column and disperse and dismount personnel, or to continue the march and return fire from the vehicles on the road. An effective warning system during movement includes security detachments, reconnaissance elements, and signal communications. If conditions permit, army

aviation should be used for route surveillance and early warning. Monitoring routes and areas for radioactive contamination may be required.

c. Occupation of New Position. Whenever possible, the new position is cleared and outposts are established prior to its occupation. If this is impracticable, outposts are established immediately upon arrival of the unit. Outposts and sentries are maintained in the old position until evacuation is complete.

73. Nuclear Ammunition

In addition to the security measures enumerated in paragraphs 68 through 72, units having a nuclear capability must protect nuclear ammunition and publications from enemy action and prevent access to classified material by unauthorized personnel. This entails security measures against the enemy and against unauthorized friendly personnel as well.

Section VI. ARTILLERY COMMUNICATIONS

74. General

a. Effective artillery support depends on efficient communication. The communication to be established in any situation is a command decision, based on the tactical situation, available facilities, and the commander's estimate. The commander is responsible for providing adequate communication with all elements of his command and with supported, reinforced, and adjacent units. He exercises his responsibility for communications through the communication officer. The communication officer exercises immediate staff supervision in the training of communication personnel and in the installation, operation, and maintenance of the communication system. He prepares communication plans and orders and advises the commander on the employment of all communication facilities.

b. All means of communication will be used as required. No means is considered primary.

75. Tactical Employment of Communication

a. General. The communication system to be established in any tactical situation will always include an alternate means of communication.

b. Offense. The amount of communication established in the offense varies with the development of the action. During the offense the rapidity of movement dictates the facilities to be established. Wire is employed whenever time permits. If radio silence or listening silence have not been imposed, radio is employed to the maximum in rapidly moving situations, since it can be established rapidly and affords communications during movement.

c. Defense. Because of the additional time available in the defense, communication systems are usually more completely developed. Wire systems are expanded by duplicating lines on alternate routes and installing lateral lines to adjacent units.

d. Marches and Bivouacs.

- (1) Communication during marches is necessary for warning, march control, collection and dissemination of information and intelligence, and transmission of both tactical and administrative orders and information.
- (2) In a bivouac or assembly area, wire communication (especially to the perimeter) is desirable if time permits.

76. Wire Communication

a. The artillery wire system is a vital means of signal communication. Wire nets for command and fire direction are installed prior to or during occupation of position. The wire system is extended, duplicated, and continuously improved as more time becomes available to meet the maximum requirement.

b. Wire communication is generally more stable than other means, does not require a high degree of technical skill to install and operate, and is less subject to disturbances or enemy jamming than radio communication.

c. Priorities for the installation of wire systems are established to enable artillery to deliver fires as rapidly as possible. First priority should be given to fire direction circuits. Local and administrative circuits may be installed later.

77. Radio Communication

a. Radio, when properly used, furnishes a

most valuable means of signal communication. It is used for both tactical and administrative messages. It is an essential means of communication for highly mobile elements. It is especially suitable for motor movements and in fast moving situations.

b. The short-phase repeat-back method of communication transmission described in FM 6-10 may be used for conduct of fire.

c. The force signal officer is responsible for the assignment of radio call signs and frequencies throughout the command. He makes the assignment in the signal operation instruction (SOI). The signal officer also prescribes a system for adding suffixes to radio call words. Suffixes are used to indicate staff positions or subordinate radio stations that otherwise would require separate call words. Suffixes to be used by the artillery are determined by the artillery communication officer and forwarded to the signal officer for inclusion in the SOI (FM 11-16).

d. Nuclear fire missions must be properly encoded or encrypted.

Section VII. ARMY AVIATION

78. Organization

Army aviation is utilized to expedite and improve ground combat capabilities and logistical procedures. For a detailed discussion of army aviation, see FM 1-100.

79. Tasks

Army aircraft are a means for assisting the artillery in performing many of its tasks. Some of these are—

a. Aerial target acquisition and adjustment of fires.

b. Aerial imagery collection (photograph, infrared, and radar).

c. Route reconnaissance.

d. Wire laying, radio relay, and message delivery.

e. Evacuation of casualties.

f. Aerial inspection of camouflage.

g. Battlefield illumination.

h. Survey assistance.

i. Column control.

j. Air transport of artillery weapons, crews, and supplies.

k. Aerial observation.

l. Command and liaison activities.

m. Movement of special ammunition or components of special ammunition.

n. Tactical damage assessment.

80. Employment

The artillery aircraft normally function under the control of the artillery commander or a subordinate unit commander within the command. Decentralization of control to subordinate artillery units may be necessary to insure close support and the maximum use of aircraft. Every effort is made to enable aircraft to operate from airfields in close proximity to supported artillery units.

81. Airfields

The location of airfields and heliports will depend primarily on the tactical situation, the terrain, and other facilities. These landing areas must be free of obstacles and wires. Airfields must have sufficient length and adequate surface for the type of aircraft used.

CHAPTER 5

FIRE SUPPORT

Section I. GENERAL

82. General

a. A thorough knowledge of fire support planning is necessary to obtain maximum effect from the available artillery support. Fire support planning is conducted by force headquarters of all levels.

b. Fire support planning is continuous. The detail with which fire plans are made depends on the time available for planning, the extent and accuracy of target locations, the type of operation in which the supported unit or force is engaged, the fire support requirements of the higher echelon, and available fire support.

c. Fire support planning does not cease with the issue of a fire support plan but continues throughout the operation. All elements of the fire support plan must be considered in preparing fire plans (air, artillery, naval).

83. Considerations in Fire Support Planning

The following factors must be considered in planning fires:

- a.* The mission of the supported unit.
- b.* The concept of operation of the supported unit commander.
- c.* Requirements of the fire support plan of higher headquarters.
- d.* The general location, time, duration, and priority of fires desired.
- e.* Information of the enemy to include the size and composition of targets.

f. Ammunition available, to include nuclear weapons and their location.

g. Fire support means available.

h. Observation requirements.

i. Common index for terrain, as established by the force and used by the support means.

j. Common target designation system.

k. Emergency signal for lifting or shifting fires.

l. Troop warning capability.

m. Allocation of nuclear weapons.

n. Limitations on fires, such as requirements for no fallout.

84. Planning Procedure

a. The fire support plan is made by the fire support coordinator as directed by the supported commander to insure complete coordination between the plan of maneuver and the plan of fire support. It amplifies the fire support portion of the commander's concept of operation by providing specific information and instructions for fire support.

b. The fire support plan forms a basis for the preparation of the fire plans of the air, artillery, and naval gunfire agencies.

c. An effective fire support plan must:

- (1) Provide adequate support for the supported unit.
- (2) Assign weapons according to their capabilities.
- (3) Furnish massed fires where required.
- (4) Facilitate future operations.

Section II. TECHNIQUES OF FIRE PLANNING

85. Definitions

The following terms used in fire planning must be understood before the technique of fire planning can be discussed:

a. Fire Plan—An order for execution of planned fires by artillery units and a statement of planned requirements for air and naval supporting fires.

b. Planned Fires—Fires (concentrations) planned on areas and targets for which a need can be expected. Such targets or areas may include known enemy locations, avenues of approach, suspect observation posts, suspect weapon locations, assembly communication centers, and other similar installations.

c. Prearranged Fire—Planned fires to be delivered at a specified time or for which a need for rapid delivery is anticipated and for which firing data are prepared in advance and kept current. They may be scheduled or on call.

d. Scheduled Fires—Prearranged fires which are to be delivered at a specific time during the maneuver or operation of the supported force. (Time is specified in terms of minutes before or after H-hour or on accomplishment of a predetermined movement or task.)

e. On-Call Fires—Prearranged fires which are to be fired as requested.

f. Concentration—A volume of fire placed on an area within a limited time, or an area designated and numbered for future reference as a possible target.

g. Group of Fires—Two or more concentrations desired to be fired simultaneously. The concentrations within a group of fires may be fired individually, consecutively, or concurrently. A group of fires may be designated by a letter and numerical combination.

h. Series of Fires—Number of concentrations or groups of fires planned to support a maneuver phase. An example is the series of fires planned on an objective area just prior to the final assault. A series of fires may be indicated by a code name.

i. Program of Fires—Number of concentrations and/or groups of fires that are planned on targets of a similar nature and fired in accordance with a time schedule. An example is the countermortar program planned by division artillery.

j. Preparation—Intense prearranged fire delivered in accordance with a time schedule, in support of an attack, to disrupt the enemy's communications, disorganize his defenses, and neutralize his fire support means. Preparations start prior to, at, or after H-hour and continue until lifted either on a prearranged time schedule or on request of the assault elements. A

preparation may include nuclear and non-nuclear fires of air, ground, and naval means.

k. Counterpreparation Fire—A system of intensive prearranged fires delivered when the imminence of the enemy attack is discovered. It is designed to break up enemy formations; disorganize the enemy's system of command, communication, and observation; decrease the effectiveness of his artillery preparation; and impair his offensive spirit.

l. Barrage—A prearranged barrier of fire designed to protect friendly troops and installations by impeding enemy movement across defensive lines or areas. It is generally part of the final protective fires.

m. Schedule of Fires—A tabular or graphical presentation of scheduled fires which is fired in definite time sequence. The time of starting the schedule may be on call, at a prearranged time, or at the occurrence of a specific event.

n. Supporting Fire—Fires delivered while the supported troops are engaged in either the attack or the defense. Supporting fires may be prearranged as to both time and place (scheduled fires), fired on request (on-call fires), or they may be fired on targets of opportunity.

o. Targets of Opportunity—Targets on which fires are not prearranged.

86. Targets of Opportunity

Since targets of opportunity are normally fleeing in nature, they must be taken under fire as quickly as possible. Firing on the targets of opportunity involves essentially the same considerations as for prearranged fires; however, the targets are attacked immediately as they arise. Effective attack of these targets requires—

a. Employment of adequate reconnaissance and intelligence agencies by the commander.

b. Direct exchange of information and/or intelligence between higher, lower, and adjacent units.

c. Employment of the weapon that can place rapid effective fire on the target.

d. Sufficient ammunition on hand.

e. Rapid analysis of the target, prompt decision to fire, and subsequent fire order.

f. Close and continuing coordination with interested personnel and agencies.

87. Determination of Weapon and Ammunition

a. Target Information. Timely target information is essential to enable the commander to properly influence the action with his available firepower. A single observer may be unable to provide all the information required by the commander or his representative to determine the weapon and ammunition to be used; all sources of information and acquisition must be exploited.

b. Tactical Significance. Certain targets may possess sufficient tactical importance to warrant attack by a specific weapon or ammunition without regard for the size or density of the target.

c. Results Desired. Certain targets may be destroyed or neutralized by specific weapons or types of ammunition; e.g., persistent chemicals may be used as barrier defenses; nonpersistent chemicals may be used to incapacitate large numbers of troops; or munitions may be used to destroy and contaminate personnel and material. Surface bursts of nuclear weapons may be utilized to extend casualty producing levels of fallout to greater distances and over wide areas.

d. Target Size. Consideration must be given to the radius of effect of the weapons and to the area of terrain affected by these weapons. In this connection, nonnuclear artillery and nonnuclear tactical air have the flexibility necessary to attack targets occupying very small areas as well as those occupying larger areas. The larger areas require multiple units and excessive ammunition expenditure with a comparatively low order of "target kill." Conversely, nuclear and CBR munitions attacking small area targets risk expensive "over-kill"; therefore, the area occupied by the target is a consideration in weapon selection.

e. Reaction Time. The reaction time varies with the weapon system and the state of readiness of the weapons within the system. Nonnuclear artillery fire is most responsive. The response time of tactical air will depend on the status of the aircraft: "air alert" is most responsive and most uneconomical; "ground alert" is not so responsive but assures maximum use of available support. The reaction times of nuclear firing systems vary with the complexity of the system.

f. Time Requirements. The time required for delivery of fire, after the target information is available, depends on three primary factors:

- (1) The time required to process the information into a specific recommendation or decision as to weapon and ammunition.
- (2) The time required to compute data and, concurrently, to secure command approval in situations not covered by directives, guidance, or policies.
- (3) The time required to warn troops and aircraft within the radius of weapon effects.

Note. The effects of munitions and the capabilities of weapons are given in the appropriate field and technical manuals.

g. Radius of Integration. The radius of integration is defined as "a term used in fire planning for the integration of nuclear and nonnuclear fires. The RI is a radial distance from the desired ground zero of a planned nuclear weapon. The radial distance is that distance where the effects of the planned nuclear weapon will be approximately equal to the effects of nonnuclear weapons for average type targets." When integrating nuclear and nonnuclear fires, the nonnuclear fire planner will consider the radius of integration in the following ways:

- (1) Nonnuclear fires will be planned regardless of location of planned nuclear fires and their radii of integration.
- (2) Nonnuclear fires will be scheduled outside of the radius of integration of a scheduled nuclear concentration, as required, without regard to the nuclear preparation.
- (3) Nonnuclear fires *will not normally* be scheduled within a radius of integration. They *may* be scheduled within an RI when considered necessary, because of terrain, relative hardness of target, commander's requirement, etc.

88. Support for Offensive Operations

Fire support for offensive operations may consist of a preparation and subsequent fires supporting the attack. The preparation may be delivered prior to the advance of the attacking echelons from their line of departure and may continue for a short time thereafter.

a. Preparation.

- (1) Fires planned for the preparation are normally limited to known targets and suspect areas. The delivery of scheduled fires should be consistent with the threat imposed and time available for coordination.
- (2) The force commander ordering the attack determines whether there is to be a preparation and its duration. He considers—
 - (a) Whether the probable effect of the preparation will justify the attendant loss of surprise.
 - (b) Available fire support and the supply of ammunition.
 - (c) The number of remunerative targets that can be located in time to prepare and assign fires.
 - (d) Whether the effect sought can be accomplished before the enemy can change his major tactical dispositions to meet the attack. This is particularly important when fires are delivered in support of an exploitation.
- (3) Preparations may be divided into phases to concentrate fires successively on the various targets. The number, order, and length of the phases are scheduled to fit the situation. Safety of personnel and aircraft may require separate phases of target attack.
 - (a) *First phase*—Fires to gain superiority over hostile artillery, to interdict routes, and to neutralize enemy command, communication, and observation systems.
 - (b) *Second phase*—Fires to neutralize hostile artillery and command, communication, and observation systems and to interdict routes; fires to neutralize defensive areas, weapons, reserves, assembled mechanized units, and to destroy obstacles.
 - (c) *Third phase*—Fires to neutralize targets engaged during phase I and II; delivery of massed fires on defensive areas in the forward portion of the enemy position with

priority to defensive elements that threaten the success of the supported force's attack.

- (4) The approximate length of a preparation can be determined by considering the number of known targets, the planning time for each target, the number of fire support units, and the amount of ammunition required to neutralize each target. Planning time includes the time required to fire on a target plus the time required to shift to a new target.

b. Fires Supporting the Attack.

- (1) Fires planned in support of the attack are shifted to conform to the movements of the supported unit(s). These fires are planned in the form of concentrations, groups of fires, and series of fires on a time schedule or on call.
- (2) Supporting fires are planned by each echelon to—
 - (a) Assist the advance of the supported units by attacking targets as required.
 - (b) Assist the supported units in gaining fire superiority on each successive objective so that the assault echelons can close to assaulting distance.
 - (c) Protect the supported units during periods of reorganization.
 - (d) Assist in breaking up enemy counterattacks. When likely assembly areas and routes for enemy counterattacks can be determined, concentrations are planned to be fired on-call.
 - (e) Continue the neutralization of hostile observation.
 - (f) Continue the neutralization of hostile artillery and automatic weapons.
 - (g) Prevent the enemy from reinforcing, supplying, or disengaging his forces.
 - (h) Disrupt the enemy's command and communication systems.

Note. Format for a fire support plan is shown in appendix III.

89. Support for Defensive Operations

a. General. For planning purposes, defensive fires are divided into four categories:

- (1) Fires delivered before the enemy forms for the attack.
- (2) Counterpreparation.
- (3) Fires during the enemy attack.
- (4) Fires in support of the counterattack or in support of limited offensive action associated with the counterattack.

b. Fires Delivered Before the Enemy Forms for Attack. Fires delivered before the enemy forms for attack include interdiction and harassing fires, fires that will force the enemy into early deployment, and fires in support of covering forces and outposts.

- (1) Harassing and interdiction fires are usually planned by division, corps, and army artilleries. Harassing and interdiction fires are prearranged as much as possible. They are based on studies of maps, terrain, and road nets available to the enemy and all available target intelligence. Targets suitable for harassing fires are hostile batteries, industrial installations, assembly areas, observation posts, communication centers, command posts, and leading enemy elements. Interdiction fires on communication centers, harbors, command posts, road junctions, bridges, and crossroads may be profitable. These fires should be irregularly spaced to avoid giving the enemy a predictable pattern of fire. Deception must be maintained as to the amount and location of the artillery.
- (2) Fires in support of a covering force are usually planned by the highest artillery echelon with the force. Additional fire support for the general outpost force and the main defensive force is planned to cover the withdrawal of the covering force.
- (3) Fires in support of the general outpost force are usually planned by the artillery with that force. Additional fires by the artillery with the main defensive force may be planned in support

of the general outpost force and are planned to cover its withdrawal.

- (4) Artillery supporting a covering force or general outpost force will usually fire from forward positions to prevent disclosing to the enemy the artillery positions to be used to support the battle area.
- (5) Fires in support of the combat outpost are usually planned by the artillery with the main defensive force.
- (6) Time of opening fire is decided by the force commander except for fires in support of a covering force or outpost. Premature firing will expose the artillery to neutralization and may reveal the plans of the defending force. Therefore, firing is confined to dangerous or highly remunerative targets.

c. Counterpreparation.

- (1) Counterpreparation fires are planned at each artillery echelon and are designed to disrupt enemy preparations for an attack. Counterpreparation fires are delivered only on order of the force commander. A counterpreparation includes fires on known and suspect assembly areas, enemy command and observation posts, communication centers, lines of communications, hostile artillery, mortars, missiles, and forward hostile elements. Counterpreparation fires are considered and integrated at each higher artillery echelon.
- (2) Premature firing furnishes the enemy with counterbattery data for his artillery preparation, indicates to the enemy what areas to avoid in the attack, and expends ammunition that may not be replaceable.

d. Fires During the Enemy Attack.

- (1) If the enemy is successful in launching his attack, fires are delivered to break up his attack formations, to repel his assault, and to limit his penetration.
- (2) Planning of defensive fires is concentrated chiefly at the direct support artillery battalion. Division and corps

artilleries plan fires to augment the defensive fires of the direct support battalions.

e. Fires Supporting the Counterattack. Fires supporting the counterattack are prearranged as much as possible and may include a preparation and fires in support of the attack. Fires during the counterattack are delivered in close support of the counterattacking force to destroy the enemy within the penetrated area and to prevent his reinforcement within the penetrated area.

90. Flak Suppression

Flak suppression missions may be fired by artillery on request of tactical air commanders to reduce interference with close air support missions or they may be fired in support of army aviation operations. These fires must be prearranged to insure engagement of all known enemy air defense artillery positions within range. Air Force flak intelligence and other agencies furnish the target data to artillery commanders. Requests for, and coordination of, flak suppression missions are conducted through the air-ground operations system and the army aviation element of the TOC and implemented at the artillery fire direction center.

91. Fire Plans

The fire plans of lower echelons are coordinated, consolidated, augmented, and integrated at each successive artillery echelon. Toxic chemical, biological, radiological, nonnuclear, and nuclear fires are integrated within each fire plan (air, artillery, and naval) at each force level if applicable.

92. Air Fire Plan

a. The air fire plan is integrated with other fire plans to implement the force fire support plan and, when published, becomes an appendix to the fire support plan.

b. The air fire plan is prepared by the G3 Air group in the Tactical Air Support Element (TASE) of the Division Tactical Operations Center. This plan will include the chemical, nuclear, and nonnuclear fires to be delivered by tactical air.

c. The air fire plan is not an order to the supporting air. When approved at independent

corps or army TOC, it becomes a requirement to the Air Force operations center.

d. An air fire plan appendix is shown in appendix III.

93. Artillery Fire Plan

The artillery fire plan is integrated with other fire plans to implement the force fire support plan and, when published, becomes an appendix to the fire support plan. The nuclear portion of the fire plan may be a separate appendix of the fire support plan or it may be a part of the artillery fire plan. If it is a separate annex, it is prepared by the FSE. If it is a part of the artillery fire plan, nuclear fires are planned by the FSE, and the planning data are sent to division artillery FDC for incorporation into the artillery fire plan. An artillery fire plan is shown in appendix III.

94. Procedure for Artillery Fire Planning

a. General. Successful operations depend on detailed coordinated plans. An example of the checklist method of preparing an artillery fire plan is shown in appendix V. The planning process consists of the following:

- (1) Collection of accurate target information.
- (2) Selection of targets best suited for attack by the available artillery.
- (3) Estimation of the artillery and ammunition needed to obtain the desired effect on target.
- (4) Preparation of a detailed artillery fire plan for the employment of artillery against known and oncall targets.

b. Artillery Fire Plans. Artillery fire plans are prepared by the operations personnel at each artillery echelon with instructions from the force commander and higher artillery headquarters. The fire plan has five parts—a graphical portion showing the planned concentrations, a target list, marginal information which includes requests for additional fires, a schedule of fires when appropriate, and a table of groups of fires when appropriate.

c. Steps in Preparing the Artillery Fire Plan.

- (1) The concept of the operation, allocation of ammunition, priorities for support, and organization for combat are announced by the force commander (fire support plan).

- (2) The special requirements of both the force and supported unit commanders are obtained from fire support coordinators or liaison officers.
- (3) A list of known targets is compiled by the artillery S3 and S2. A list of suspect targets is compiled by the S2, using all available sources. The known and suspect targets are combined in a general list for fire planning.
- (4) Concentrations are planned to cover known and suspect targets and critical areas within the zone of operation.
- (5) Operations and intelligence personnel study targets to determine the best method of attack (cannon, air, or missile) and the best type of munition (nonnuclear, chemical, or nuclear).
- (6) To the extent possible, fires are planned as requested by lower echelons. However, the requirements of the force or supported commander and those of higher echelons are accepted as they are received and included in the plan.
- (7) The next higher artillery echelon supplements the fires of lower echelons.
- (8) Lower artillery echelons request the next higher artillery echelon to plan fires on targets beyond the capabilities of weapons at the lower echelons.
- (9) Higher artillery echelons may direct lower artillery echelons to plan fires on targets critical to the force as a whole.
- (10) Artillery fire plans of lower echelons are coordinated to conform with instructions of the force commander.
- (11) Groups, series, and programs of fires are prepared by the appropriate artillery echelon as required to support the plan of maneuver.
- (12) Schedules of fires are prepared when appropriate. In scheduling fires, the capabilities of each unit are determined in terms of the targets it can attack. The fires of the units capable of attacking the fewest numbers of those targets selected are scheduled to the extent of their capabilities (app. III).

- (13) Throughout the preparation of artillery fire plans, coordination is required with supported units; other supporting agencies (air and naval fire); and higher, lower, and adjacent artillery echelons.

d. Battalion Fire Planning.

- (1) Direct support battalions develop their fire plans from the requirements of the division fire support plan and the supported unit's requests for fires.
- (2) Fires of artillery battalions having a reinforcing mission are planned by the reinforced unit. The fires of corps artillery battalions with a mission of reinforcing a division artillery are planned by division artillery or division artillery battalions, depending on the mission.
- (3) Fires of artillery battalions having a general support mission are normally planned by a higher artillery headquarters.
- (4) Fires of artillery battalions having a general support, reinforcing mission may be planned in detail by a higher artillery headquarters or may be allotted in bulk or in part to the reinforced artillery unit.

e. Group Artillery Fire Planning. Artillery groups plan fires of attached battalions to the extent directed by the headquarters to which the group is attached.

f. Division Artillery Fire Planning. The division artillery fire planning objective is the coordinated artillery fire support of the division as a whole. Depending on the situation, fire planning may vary from the checking of direct support battalion fire plans in a rapidly moving situation to the preparation of the complete and highly detailed plans required in the attack of a fortified position.

- (1) A division artillery fire plan is usually initiated by planning fires for the division general support artillery on targets requested by, or beyond the range of, direct support battalions, and on targets of interest to the division as a whole. Fire plans of direct support artillery are augmented when necessary by general support and reinforcing

ing fires and integrated with the fire plan of the division artillery.

- (2) The division artillery fire plan, when completed, may be reproduced and disseminated. However, it is modified as necessary to meet changes in the situation.
- (3) Coordination with the lower echelon of the force is made if fires are planned within the lower echelon's zone of responsibility or if the lower echelon's operations are affected.

g. Corps Artillery Fire Planning. The corps artillery fire planning objective is the coordinated artillery fire support of the corps as a whole. Corps artillery maintains liaison and communication with each division artillery within the corps for prompt action on fire requests and coordination of fires of mutual interest. In addition, liaison and communication are maintained laterally between corps artillery.

- (1) Preparation of the detailed corps artillery fire plan starts with planned fires in the corps zone on hostile artillery locations, targets beyond the range of division artillery, and targets of importance to the corps as a whole.
- (2) Artillery fires requested by lower echelons are included in the corps artillery fire plan.
- (3) The corps artillery fire plan is modified to meet changes in the situation.

- (4) Coordination with the lower echelons of the force is made if fires are planned within the lower echelon's zone of responsibility or if the lower echelon's operations are affected.

h. Army Artillery Fire Planning.

- (1) The army artillery is responsible for detailed fire planning for the artillery under army control. Because of the capabilities of army artillery, fires are planned on targets beyond the capabilities of corps artillery weapons, on targets for which fire is requested by corps, and on targets of interest to the army as a whole.
- (2) Coordination with corps is made if fires are planned within the corps' zone of responsibility or if the corps' operations are affected.
- (3) The army artillery fire plan is coordinated with the air fire plan and the naval fire plan by the army artillery commander.

i. The Naval Gunfire Plan. The naval gunfire plan is integrated with other fire plans to implement the force fire support plan and, when published, becomes an appendix to the fire support plan. The naval gunfire plan is normally coordinated by the fire support coordinator or his representative. This plan is not a directive to the supporting naval unit but furnishes information to the force. A naval gunfire support status chart is shown in figure 30.

Section III. TARGET ANALYSIS

95. General

a. Target analysis is the examination of potential targets to determine their military importance, priority of attack, and capabilities of available weapons for such attack. Targets of opportunity, as well as targets for prearranged fires, are analyzed. The length of time and amount of detail involved in making a target analysis depends on the amount of information available concerning the target, the means of attack available, the degree of coordination required, and the urgency for the attack.

b. For nuclear analysis methods, see FM 101-31.

96. Mission of the Supported Force

a. The concept of operation as announced by the commander to accomplish the mission becomes the basic consideration in making a target analysis. Supporting firepower is deployed to aid the accomplishment of the mission. The nature and characteristics of the target do not in themselves dictate the method of attack. The importance of the target, as measured by its capability to influence the operation, is an important consideration.

b. Because of the potential effect of nuclear firepower, the integration of nuclear fires with the scheme of maneuver or a plan of defense is

of great importance. When possible, the tactical advantage gained through the use of nuclear weapons should be fully and expeditiously exploited through maneuver. For this reason, the force commander may desire to make the decision concerning the employment of nuclear weapons, or he may delegate all or part of this authority to the fire support coordinator and major subordinate commanders.

c. Standing operating procedures and policies of the appropriate commander must be considered early in making a target analysis. These policies must be well known to all fire support agencies to insure rapid, expeditious engagement of targets.

97. Target Characteristics and Effect of Weather and Terrain

a. *General.* Characteristics of the target include all features of the target and target area that may influence the decision to attack. Targets about which little is known may, and often should, be taken under fire. However, the more that is known about a target, the greater is the likelihood that it will be suitably attacked. Full use of available target intelligence should be made in conducting target analyses. The artillery S2 is responsible for ascertaining the target characteristics and recommending to the fire support coordinator the relative priority of attack for each target. The principal target characteristics to be considered are as follows:

(1) *Nature of the target.*

- (a) Composition.
- (b) Size and shape.
- (c) Vulnerability.
- (d) Mobility.
- (e) Recuperability.

(2) *Location of the target.* The location of the target may indicate a particular means of delivery. The proximity of the target to friendly troops and to enemy installations protected by national or theater policy should be considered. The probable accuracy of the target location should be analyzed.

b. *Terrain and Weather.*

- (1) *Terrain.* The terrain in the target area has a direct bearing on the vulnerability of the target. Rugged terrain affords considerable natural cover

and makes target location difficult. Targets in defilade sometimes can be reached only by high-angle fire or by aircraft. Certain terrain provides complete defilade from some angles of approach but not from others, thereby influencing the selection of a means of attack. Frequently, it may be necessary to move a weapon to a position from which it can deliver effective fire on the target. The nature of the vegetation in the target area should be considered in the selection of ammunition. Information as to the relief, surface soil conditions, and vegetation in the target area is desirable in considering nuclear attack. Uneven terrain frequently limits surveillance of fires to aerial observation and, in some instances, completely prevents observation of fires. Uneven terrain limits sound ranging coverage, reduces radar coverage, and may reduce the effect of nuclear weapons.

- (2) *Weather.* Weather greatly affects the capability of attack by air and to a lesser degree by naval gunfire and artillery. It is of special importance in evaluating a target for nuclear or chemical attack. Information as to visibility at ground level, the amount of cloud cover, and height of the ceiling is an important requirement.

- (3) *Joint effects.* Terrain and weather jointly affect visibility of the target and further study may be required to determine a suitable means and method of attack.

c. *Target Capabilities.* Target capability is the ability, actual or potential, of a target to influence the accomplishment of the supported unit's mission. An estimate is made as to the time a target can exercise its capability. Target capability is an important consideration in determining the priority assigned to the attack of a target and the weight of fire delivered on the target. The time of attack, the effect desired, and the selection of the means to be used are influenced by target capabilities.

- (1) *Priority for attack.* There is rarely sufficient fire support to attack simul-

taneously all targets that it may be desirable to engage. Accordingly, the attack of these targets is usually spread over a period of time. On occasion, owing to such factors as ammunition shortage or inadequacy of available delivery means, it may not be possible to attack all known targets. Therefore, it is often desirable to determine the relative priority of targets for attack. Intelligence and operations representatives work together in assigning priorities. Priorities do not necessarily indicate the time of attack or the sequence in which targets will be attacked. The priority assigned a specific target will frequently depend on the echelon assigning the priority and the mission of the supported unit. A top priority target at direct support level may have a much lower priority at corps artillery level.

(2) *Priority classification.* As a guide in determining priorities for attack of targets, the following may be used:

- (a) *Priority I.* Targets capable of preventing the execution of the plan of action.
- (b) *Priority II.* Targets capable of immediate serious interference with the plan of action.
- (c) *Priority III.* Targets capable of ultimate serious interference with the execution of the plan of action.
- (d) *Priority IV.* Targets capable of limited interference with the execution of the plan of action.

d. *Enemy Countermeasures.* The capability of the enemy to interfere with or to prevent effective delivery of fires and his ability to minimize the effects of the fire are ascertained, if possible. These factors directly influence the delivery means to be used and the protection or assistance to be provided the delivery means. Enemy countermeasures which can be expected include counterbattery fire, air defense artillery fire, electronic jamming, the attack of position areas by tactical aircraft, and guerrilla attack.

98. Selection of Type Effect

After examining the characteristics of the target, a tentative decision is made as to the type of effect and degree of damage desired. If suitable weapons and ammunition are available, the tentative decision is confirmed. Common types of fires that may be selected are described in *a* through *d* below:

a. *Destruction fires* are artillery fires delivered for the sole purpose of destroying material objects. Destruction fires may be accompanied by penetration, blast effects, nuclear radiation, or incendiary action or by a combination of these actions.

b. *Neutralization fires* are fires which are delivered to cause casualties, to hamper and interrupt the firing of weapons, movement, or action, and to reduce the combat efficiency of enemy personnel. A satisfactory degree of neutralization sometimes can be accomplished by smoking a target or by screening a friendly force from the target. Illumination at night may assist in effecting neutralization.

c. *Harassing fires* are fires of less intensity than neutralization fire, designed to inflict losses, to disturb the rest of the enemy troops, to curtail movement, and in general, to lower morale.

d. *Interdiction fires* are fires placed on an area or point to prevent the enemy from using the area or point. Interdiction fire is usually of less intensity than neutralization fire.

99. Determination of Suitable Weapons

a. *General.* The characteristics of available fire support means must be considered to determine which means is most capable of producing the desired effect on the target. A less capable means may be used if time or ammunition limitations preclude the use of the most effective means.

b. *Assignment of Prearranged Missions.* Priority in the assignment of prearranged missions to supporting arms should ordinarily be in the order of artillery, naval gunfire, and air support. Air support ordinarily is not assigned a mission which can be accomplished as well by artillery or naval gunfire, and naval gunfire is not assigned a mission that is better suited to artillery. This principle, however, must not

adversely influence the prompt delivery of available naval gunfire support nor restrict the use of air support when that arm is available and capable of delivering the support required.

c. Firepower. Any firepower selected must be capable of producing the desired effect on the target and must be able to do so without causing excessive undesirable effects on the target and in the target area.

- (1) *Weapons.* The caliber or type, rate of fire, and refire capability of a weapon must be considered, since it is possible that the desired effect may be achieved by one weapon, by more than one weapon of the same type, or by weapons of different types.
- (2) *Ammunition.* The target may dictate the type of weapon and ammunition to use. Neutralization, harassing, and interdiction of a target can be achieved by fires of lesser intensity than those required for the destruction of a target. The available supply rate or nuclear weapon allocation is always considered, and the greatest effect possible must be achieved for the amount of ammunition expended.
- (3) *Personnel targets.* All types of firepower are effective against personnel. Attack of personnel in the open by light artillery, light naval weapons, and fighter bombers is appropriate. Projectiles and fragmentation bombs with variable time fuzes are effective against personnel in the open. Nuclear firepower is the greatest casualty producer, but its employment may be limited to the most profitable targets. Effects of fallout may be utilized to extend the effects of nuclear weapons and produce casualties over wide areas.
- (4) *Defensive works.* The heavier weapons are best suited to the destruction or neutralization of bunkers, pillboxes, dugouts with heavy overhead cover, and other defensive works. Chemical agents are effective in neutralizing these positions. For penetration capabilities of various weapons, see TM 9-1907 and FM 6-40.

(5) *Materiel targets.* Materiel targets may be rendered ineffective by neutralization of the operating personnel or by destruction of the materiel itself. The problems involved in the destruction of materiel targets are similar to those in the destruction of defensive works. Materiel targets are frequently accompanied by personnel and require firepower means consistent with both target requirements. Air attack with napalm is particularly effective against materiel targets. Either heavy or very heavy cannon, antitank, and similar type missiles, heavy naval gunfire, or air bombardment is usually required for destruction of heavier types of materiel. Properly delivered nuclear fire is effective against all materiel targets.

(6) *Large target areas.* Frequently, several targets are located in one large area. Nuclear firepower (to include effects from fallout) is particularly effective against a large area in which adequate coverage is beyond the capability of nonnuclear weapons or the use of nonnuclear weapons would require the expenditure of an excessive quantity of ammunition.

d. Troop Safety. The firepower means selected must be capable of engaging the target without adversely affecting friendly troops. The importance of accurate delivery of fire close to friendly lines must be emphasized. Supported troops must have confidence in supporting fire and this confidence must be carefully fostered.

- (1) *Accuracy of the means.* The means selected must have sufficient accuracy to accomplish the desired result. Generally, weapons with a large probable error are not used for close fires. Naval gunfire delivered in very close support usually requires adjustment. Close-in targets for air strikes should be carefully marked, location of friendly elements should be announced to the aircraft, and the strike should be controlled by an air controller in the air or on the ground.

(2) *Effects on target area.* If friendly troops are to move into an area immediately after delivery of fire, the effect of the fire must not deny movement or safe passage of the troops. Lingering effects from nuclear, chemical, or biological attack must be considered. Overdestruction of the target may cause debris which is an obstacle to passage by infantry and armored elements and may actually strengthen the enemy defenses.

(3) *Effects of weather.* The weather conditions in the target area must be considered. The average wind effect, if the wind blows toward friendly troops, may prohibit close nuclear, chemical, or biological attack. Heavily vegetated areas, if inflammable, may be ignited by incendiaries and the resultant grass and timber fires may jeopardize friendly troops.

e. Other Factors. Other factors to consider in determining a suitable weapon for the attack of a target are the need for speed, the dependability of the weapon, its vulnerability to enemy countermeasures, and its ability to provide massed fire:

100. Method of Attack

Having selected the type and amount of firepower and the means of delivery, the effectiveness of the fire can be further increased by the method of attack. The factors which determine the method of attack are:

a. Location of the Center of Impact. In a small target area the fire is placed on the center of the area. In a large target area, separate centers of impact may be selected to insure adequate coverage. The terrain in the target area is studied, and fire is placed to minimize the protection afforded to enemy by natural cover. The determination of a suitable height of burst is important to the success of a nuclear attack.

b. Surprise Fire. The effectiveness of fire can be materially improved by the delivery of fire without adjustment to obtain surprise. Surprise reduces the effectiveness of enemy protective measures and countermeasures. The principal means of obtaining surprise fire is to place a large amount of fire on an area in a short

period of time, either by nuclear fires or by using the time-on-target (TOT) method with nonnuclear fires. The time-on-target method requires simultaneous arrival at the target of fire from several units; success depends on accurate survey, registration, and the application of meteorological corrections. If the number of units available is not sufficient for effective time-on-target fires, then the use of weapons with a high rate of fire is desirable.

c. Density of Fire. Uniform density of fire on all parts of the target area is normally desirable. This density of fire is accomplished by attacking parts of the area successively with one unit or with several units simultaneously, the latter being more effective.

d. Duration of Fire. Although intense fire of short duration produces the greatest casualty effect, the mission may require fire on a target over a longer period of time. The availability of ammunition frequently will influence the duration and intensity of the fire. This is the case with harassing and interdiction fires where the objective is to curtail movement, to disrupt or intermittently deny use of communication routes to the enemy, and to keep the enemy unnecessarily alerted with a consequent loss of morale and efficiency.

101. Time of Attack

The time of attack selected for each target should insure maximum overall effectiveness of all available fires. The target having the highest priority for attack is not always first nor is it always best to attack a target as soon as possible after it is located. Selection of time of attack is influenced primarily by the following factors:

a. Mobility of the Target. A fleeting target ordinarily has a higher priority for attack than a static target.

b. Recuperability of the Target. The time required for repair or replacement of the target by the enemy should be considered in selecting the time to attack the target. Additionally, the period of time during which the target is most critical to the supported unit should be estimated. A comparison of these times will indicate a desirable time of attack.

c. Limiting Factors. Although the mobility and recuperability of the target indicate a de-

sirable time for attack, other factors may necessitate attack at a less desirable time or with less desirable means. In some cases, they may even prevent any attack by fire. These factors are:

- (1) Nonavailability of suitable weapons.
- (2) Priority for attack.
- (3) Restrictions on firing.
- (4) Ammunition limitations.
- (5) Weather.

102. Decision to Fire

Having determined the most suitable means, method of attack, time of attack, and the ammunition to be expended, the decision is made. The decision sets forth the type and amount of fire to be employed, the units to fire, the grid reference and altitude of the desired center of impact, the height of burst if applicable, the time of attack, safety precautions, and the method of conducting tactical damage assessment.

103. Tactical Damage Assessment

a. Tactical damage assessment is an examination of the target area to appraise the effect on an attack. It is conducted to determine whether the balance of the tactical plan can be implemented, or whether additional nuclear or nonnuclear fires are required. Examination of target area is made by available surveillance means. Answers to the following questions are required:

- (1) Did the weapon detonate in the vicinity of the desired point?
- (2) Was the enemy in the area where the weapon detonated?
- (3) Were significant obstacles created?

b. Information for tactical damage assessment can be obtained from the following sources:

- (1) Agencies that obtained the target information initially.
- (2) Image interpretation.
- (3) Inspection of target area after capture.
- (4) Interrogation of prisoner-of-war reports.
- (5) Captured documents, reports, diaries, and letters.
- (6) Friendly civilian personnel who observed the result of fire.
- (7) Clandestine means.
- (8) Communications and electronic intelligence means.

c. Tactical damage assessment is a responsibility of the headquarters ordering the fires. Tactical damage assessment may be made by any agency capable of obtaining the necessary information. The fire support plan may contain instructions for tactical damage assessment.

d. Artillery agencies may make the tactical damage assessment report and forward them to the artillery S2. All pertinent information is disseminated to higher, lower, and adjacent echelons. Pertinent data from these reports are entered on appropriate file cards. This data is analyzed to determine the comparative effectiveness of artillery weapons, techniques, and ammunition in the attack of specific types of targets. The artillery commander uses information regarding enemy doctrine and practices to increase the effectiveness of artillery fire.

Section IV. FIRE DIRECTION

104. General

a. Tactical Fire Direction. Tactical fire direction is the exercise of tactical command of one or more units for the location of targets, designation of units to fire, and allocation of ammunition for each mission.

b. Technical Fire Direction. Technical fire direction is the conversion of fire missions to appropriate firing data and fire commands to the weapons.

c. Objective of Fire Direction. The objective of fire direction is to enable the artillery commander to insure:

- (1) Continuous and accurate fire support under all conditions of weather, visibility, and terrain.
- (2) Sufficient flexibility for prompt and accurate massing of the fires of his units in any area within range and

retain the capability for distribution of fires on numerous targets.

- (3) Control of artillery fire through orders, policies, and priorities and by means of adequate liaison, observation, and communications.
- (4) Coordination of artillery fires and integration with the fires of other fire support means.

105. Fire Direction Center (FDC)

a. The fire direction center, consisting of gunnery, intelligence, communication personnel, and equipment, is the element of the artillery headquarters by which the commander exercises fire direction or fire control. The personnel and equipment to accomplish this function are authorized by tables of organization and equipment.

b. At division level and above, the fire direction center controls and directs the fires of the units over which it exercises centralized control. Firing data is not usually prepared. The control requires the S3 or his representative to make the decision to fire, prescribe the method of attack, allot the amount of ammunition to be fired on each target, and alert the selected artillery units. The artillery closely coordinates its fires with the supported unit. Target intelligence and the coordination of counter mortar (division) or counterbattery (corps) activities are the primary concerns of the artillery S2.

c. The battalion fire direction center translates target intelligence, fire missions from

higher commanders, and fire requests into the appropriate fire commands and transmits them to the batteries. For nuclear missions the battalion FDC normally only monitors fire missions which are transmitted direct from the FSE to the battery FDC. In some units (e.g., Sergeant, Pershing, and 280-mm gun), there is no battalion FDC as such since only the batteries have the capability to compute firing data. The battalion operations section controls and supervises the operation of the missile or cannon batteries. The battalion FDC is organized and supervised by the battalion S3 who also organizes the installation of the FDC. The personnel that may be used in the operation of the battalion FDC are the S3, the assistant S3(s), the operations sergeant, chart operators, computers, and switchboard and radiotelephone operators. Other personnel who have functions essential to the operations of the fire direction center are the battalion S2, the reconnaissance and survey officer, the communication officer, and the intelligence sergeant. For specific duties of personnel, see FM 6-40. The FDC personnel and equipment are located to efficiently perform the primary mission. Other considerations are needed for availability of shelter and required dispersion. The S3 organizes the installation.

d. Detailed techniques and doctrines of field artillery cannon gunnery are discussed in FM 6-40. Gunnery techniques for missile systems are found in the field manuals pertaining to the individual systems.

CHAPTER 6

COORDINATION OF FIRE SUPPORT

Section I. GENERAL

106. Introduction

a. Fire support is the most flexible and one of the principal resources available to the commander for influencing the outcome of battle. The effectiveness with which he employs this resource in support of his plan of action may be decisive. The coordination of fire support is not a new procedure or technique; its basic principles have existed for many years. Although established principles for the coordination of fire support do not change with the addition of nuclear weapons, the importance is enhanced by the increased lethality of these weapons.

b. The coordination of fire and maneuver are interdependent and their use must be planned concurrently. The commander at each echelon is responsible for the coordination of fire and maneuver. To assist the commander in this responsibility, the force G3 or S3 has the general staff function of coordinating fires with maneuver. The senior artillery officer of the force is the fire support coordinator; as such he is responsible to the commander for the details of surface-to-surface fire support coordination, preparation of the fire support plan, and supervision of its execution.

c. The establishment of fire support coordination procedures or agencies must be flexible. No rigid system can be equally effective in all echelons and at all times. Procedures to accomplish the task involved in the coordination of fire will vary with the headquarters, the amount and type of fire support available, and the type of operation. Procedures which can be standardized are normally included in SOP.

107. Principles

a. The supported or force commander, through combat orders, policies, or priorities,

employs all fire support available to his command.

b. The organization and procedure for the coordination of fire support provides for the following:

- (1) Adequate control and supervision by the force or supported commander.
- (2) Concentration of fire on any target or targets.
- (3) Distribution of effective fire on several targets simultaneously.
- (4) Prompt attack on targets of opportunity.
- (5) Modification of the fire support plan when necessary to meet unforeseen or changing situations.

c. Primary consideration is given to furnishing the type of fire support requested.

d. Fire missions are assigned to, or requested of, the agency that can deliver the most effective fire within the required time. When ammunition, tactical security, and coordination permit, the most economical means for delivery of fire is used.

e. Coordination must be effected rapidly and decisively in the attack of targets of opportunity. Fires on such targets usually are delivered by the most readily available effective means.

f. Fire support is accomplished by the lowest echelon which has the necessary means available. When appropriate means are not available, assistance is requested from higher echelons.

g. Fire support is coordinated at each echelon to the degree required by the mission. Final action is accomplished at the lowest echelon which can effect complete coordination of the fire support mission.

h. The necessary precautions to safeguard friendly troops, aircraft, vessels, and installations from friendly fires are implemented at each echelon where fire support is coordinated.

i. A common system of target designation must be employed by all participating fire support agencies.

108. Relationships

a. The fire support coordinator effects close coordination with the G3 (S3) on fire support

matters and in the preparation of the fire support plan.

b. When artillery is assigned or attached to a force having no organic artillery, the senior artillery officer is the fire support coordinator for the force.

c. When artillery is in direct support, the commander of the direct support artillery functions as fire support coordinator for the supported force. Likewise, the artillery liaison officers represent direct support artillery commanders at supported headquarters.

Section II. THE TACTICAL OPERATIONS CENTER

109. Definition

The tactical operations center (TOC) is an integrated staff facility at corps and army where representatives of general and special staff sections are grouped to assist the commander in exercising tactical control of his command. A TOC is also normally formed at division. These representatives provide current information on tactical operations and on the tactical support available, make recommendations for command decisions or take action with established policies, and issue implementing instructions (fig. 15).

110. Functions

Based on the principles outlined in paragraph 107 and the policies of the commander, the staff representative in the TOC assists the commander in:

a. Direction, control, and coordination of current tactical and tactical support operations of organic, assigned, or attached forces.

b. Integration of that support provided to him by other Army elements and by elements of other services with the tactical and tactical support operations of his organic forces.

111. Fire Support Element

a. The fire support element (FSE) is that section of artillery headquarters which operates in the TOC, and which performs the primary functions of coordinating surface-to-surface fire support with other tactical support operations. This element provides a central

facility through which requests for fire support (other than air delivery fire support) are processed.

b. Functions.

(1) *Artillery commander.* The artillery commander is responsible for the coordination and control of surface-to-surface fire support for providing personnel for the FSE in the TOC, and for the operation of the FSE.

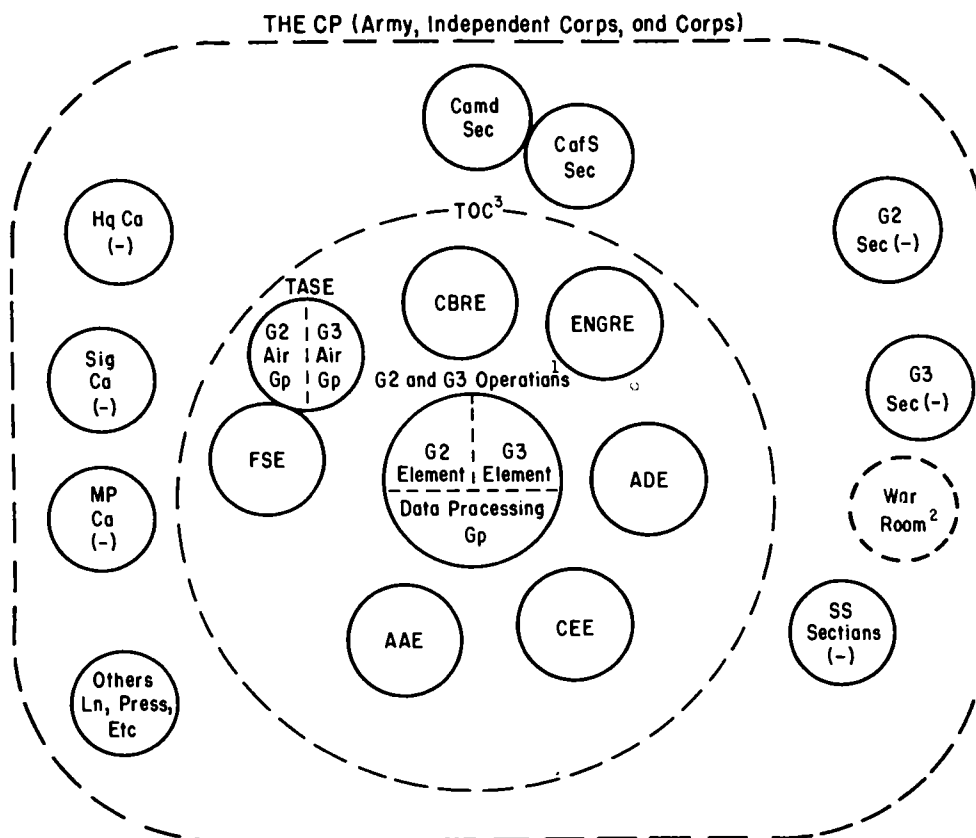
(2) *Chief, FSE.* The chief fire support element supervises the operation of the FSE. He advises other elements of TOC on the capabilities and employment of surface-to-surface fire support; insures that it is coordinated with other tactical support operations, and keeps other interested TOC elements informed of the status of surface-to-surface fire support means.

112. Functions and Procedures of the Fire Support Element

The following functions and procedures are accomplished by the FSE:

a. Supervision and coordination of surface-to-surface fire support operations.

(1) The chief of the FSE supervises and coordinates the employment of all surface-to-surface fire support retained under control of the command, to include assigning fire support missions to specific fire support agencies. He coordinates fire support with subordi-



NOTES: ¹ G2 and G3 operations include G1, G4, and G5 representation when required.

² When established

³ All TOC elements communicate, as necessary and appropriate, with: each other; other staff sections in the CP; other staff sections in other echelons of the headquarters; higher, lower, and adjacent headquarters, to include other Services, and particularly to counterpart TOC elements at those headquarters.

Figure 15. The relationship of elements in TOC to other staff elements.

nate and higher headquarters and elements of other services providing surface-to-surface fire support to insure that the operation is effectively and economically supported, and advises the G3 element on the employment of fire support as required.

- (2) The fire support element receives requests from subordinate units for fire support; evaluates the request in the light of other fire support requirements; makes decisions within delegated authority to furnish requested fire support to substitute other type fire support for that requested, or to disapprove the request; refers to the

G3 element those requests for fire support upon which decisions cannot be made by chief, FSE; coordinates with other elements as required; and advises the requesting unit of the type fire support to be furnished and the time it will be delivered.

- (3) The chief of the FSE supervises the preparation of the fire support annex to the operations order; reviews the component fire plans (e.g., artillery, air, naval fire, and the nuclear portions of each if prepared separately) to insure that all surface-to-surface and air-to-surface fires are integrated; coordinates with the air defense ele-

ment (ADE) on use of the airspace; with the chemical, biological, and radiological element (CBRE) for coordination with the CBR plan; with the engineer element (ENGRE) for coordination of the use of atomic demolitions (ADM); with the air defense element (ADE) for fires to be used to attack surface targets; and submits the fire support plan to the G3 element for the integration of fire with maneuver.

b. Coordination of surface-to-surface fires with other tactical support operations—

- (1) Through liaison with other TOC elements, keeps abreast of the tactical support operations being planned or conducted.
- (2) Determines those tactical support operations which will affect or will be affected by fire support operations. He resolves conflicts through direct coordination with other TOC elements. Conflicts which cannot be resolved through direct coordination between TOC elements are referred to the G3 element for resolution.
- (3) Advises the other TOC elements on the surface-to-surface fire support available and advises how it can be used most effectively to support their respective operations.
- (4) Keeps the other fire support agencies advised on changes in the tactical situation.

c. Recommendations of allocation and reallocation of surface-to-surface fire support means.

- (1) On the basis of the commander's concept of the operation and the missions assigned to subordinate commands, the chief of the FSE recommends to the G3 element the allocation of fire support means to subordinate commands and the command relationship between the subordinate command and the fire support unit (e.g., assignment, attachment, direct support, general support) and, when appropriate, the duration of this command relation-

ship. Upon approval, the FSE prepares and disseminates appropriate implementing instructions other than those contained in the operations order.

- (2) As required by the tactical situation or the missions assigned to subordinate commands, the chief of the FSE recommends to the G3 element changes in the allocation of the fire support means.

d. Recommendation of the allocation and reallocation of nuclear weapons to be delivered by Army surface-to-surface means.

- (1) The chief of the FSE recommends the allocation or reallocation of nuclear weapons. This recommendation is coordinated with the chief of the G2 element, Chief of the G3 air group (weapons to be delivered by tactical air), chief of the ADE (army defense means to be used in a surface-to-surface role), the chief of the ENGRE (use of ADMs), and the G4 representative in the TOC.
- (2) The coordinated recommendation is submitted to the G3 element.

e. Recommendations of targets to be attached with nuclear weapons to include tactical use of fallout.

- (1) Using the target intelligence received from the G2 element, the FSE evaluates targets continuously as they develop to determine those which are suitable for attack: Targets considered suitable for nuclear attack are coordinated with the G3 air (targets to be attacked by tactical air), ADE (tentative airspace authorization), ENGRE (when ADMs are recommended), and the CBRE (when significant fallout may result or is intended). The FSE then coordinates with the G3 element to determine the effect of the attack of these targets on the plan of maneuver. Targets evaluated by the G3 element to be suitable for attack with nuclear weapons are analyzed by the FSE.
- (2) Recommendations based on target

analyses will include the tentative method of delivery, desired ground zero, yield, height of burst, troop safety precautions, earliest and latest times on target, expected results, and prediction of fallout.

- (3) The G3 element, in coordination with the G2 element, reviews the recommendations and secures command approval.
- (4) Approved targets are referred by the G3 element to the FSE if delivery is to be by surface-to-surface means.

f. Coordination of air space requirements of Army surface-to-surface fire support means (par. 30f, DATC 101-2).

g. Maintenance of current information on the status of nuclear weapons and components thereof. This information is usually maintained by an ordnance representative who is located in the FSE. The ordnance representative will—

- (1) Maintain the current status of all nuclear weapons and components available to the command, to include their actual location, unit or installation custodian, availability codes, state of readiness, and call signs of custodial units.
- (2) Furnish the above information to other TOC elements, G3, and the commander as required.
- (3) Maintain liaison with the Ordnance officer.

113. Composition of Division FSE

The FSE is a TOE section of the artillery headquarters and headquarters battery and includes the following personnel:

- a.* The fire support coordinator and his assistant.
- b.* Target intelligence personnel.
- c.* Target analysis personnel.
- d.* Representatives of each fire support agency supporting the force.
- e.* Supporting operations and communication personnel.

114. Duties of Division FSE Personnel

Generally, the duties performed by personnel

in the FSE are the same at higher and lower echelons. The duties of personnel at the division echelon are listed below:

a. The Division Fire Support Coordinator.

- (1) Establishes the FSE and supervises and coordinates the activities of its personnel.
- (2) Supervises the preparation of fire support plans and the planning, allocation, coordination, and execution of surface-to-surface supporting fires.
- (3) Supervises the establishment of communication and the internal arrangement of communication equipment within the FSE.
- (4) Reviews fire plans to insure that—
 - (a) Fires are fully coordinated.
 - (b) Unnecessary duplication of fires is eliminated.
 - (c) Adequate fires are planned on targets and critical areas.
 - (d) Troop safety criteria are met.
 - (e) Maximum effective use is being made of fire support means.
 - (f) The plans can be implemented with the fire support means available to the division. If not, he coordinates with G3 to secure additional means, or modifies the plans.
- (5) Is responsible for establishing coordinating and limiting measures.

b. Division Artillery Assistant Fire Support Coordinator.

- (1) Is the principal assistant to the fire support coordinator.
- (2) Performs duties as directed by the fire support coordinator.
- (3) Represents the fire support coordinator in his absence.
- (4) Keeps the G3 informed of the situation pertaining to fire support.
- (5) Prepares the fire support plan; and integrates all fire plans and the fire support plan.
- (6) Keeps the personnel of the TOC informed of—
 - (a) The fire capabilities of the artillery.
 - (b) The artillery fire support actually rendered.

- (c) The location of nuclear delivery units, firing points and readiness status, and the special ammunition load (SAL) carried by these units.
- (7) Provides the division artillery fire direction center (FDC) with timely information concerning requirements for artillery fire support.
- (8) Maintains a situation map and necessary operational records.
- (9) Makes estimates as to the most effective means of attacking targets.
- (10) Supervises analysis of potential nuclear targets.

- (11) Recommends nuclear safety lines.

c. The Division Artillery Intelligence Representative.

- (1) Performs functions pertaining to target intelligence.
- (2) Furnishes direct link between the artillery S2 and the force G2 (S2).
- (3) Keeps TOC personnel informed of the current status of appropriate targets confronting the division.
- (4) Estimates the damage to targets that have been attacked.
- (5) Arranges for tactical damage assessment following a nuclear strike.

Section III. FIRE SUPPORT COORDINATION CENTER

115. Definition

If a TOC is not established, the fire support coordination center (FSCC) is the operating agency of the force or supported unit commander in which the representatives of the force or supported unit and the fire support agencies work together to plan and coordinate fire support. This agency provides for effective use of the fire support means in accordance with the plans and needs of the force or supported unit.

116. Functions

The personnel of the fire support coordination center—

- a. Continually make plans, and allocate, coordinate, and integrate all available fire support means in accordance with the directives, policies, and priorities of the supported or force commander to most effectively support the plan of operations of the force.
- b. Make necessary analyses of potential nuclear targets.
- c. Evaluate and coordinate requirements for fire support; coordinate and initiate requests for additional fire support means when required.
- d. Keep the force commander and staff informed of the capabilities of, and actual support rendered by, the fire support agencies.
- e. Advise the force commander and staff as

to the most efficient and effective employment of the available fire support.

f. Prepare the fire support plan, based on the commander's policies, plans, priorities, and in accordance with the plan of maneuver or scheme of defense.

g. Coordinate and integrate the separate fire plans (air, artillery, naval) with the fire support plan.

h. Recommend and implement approved safety measures to protect friendly troops, aircraft, vessels, and installations from friendly fires.

117. Establishment

Fire support coordination functions exist and are accomplished at all combat echelons, as required.

118. Location

a. The location of the FSCC is designated by the force or supported unit commander. Procedures must provide for continuous coordination of fire support during displacements.

b. In the selection of the command post, consideration is given to the requirement for reliable communication between the FSCC and fire support agencies.

119. Composition

The composition of the FSCC is determined by the commander concerned and may vary to

meet the needs of the situation. A typical FSCC may include the following personnel:

- a. The fire support coordinator and his assistant.
- b. The (S3) air.
- c. The (S2) air or his representative.
- d. Target intelligence personnel.
- e. Target analysis personnel.
- f. Representatives of each fire support agency supporting the force.
- g. Other representatives as required (e.g., chemical officer).
- h. Supporting operations and communications personnel.

120. Communications

a. Reliable communication must be established, using existing facilities where possible, between the FSCC and—

- (1) The FSCC's/FSE's at higher and lower echelons.

- (2) The force or supported unit.
- (3) The artillery (FDC).
- (4) Other fire support agencies.

b. Communication between FSCC's and from them to the supported unit or force is a command responsibility.

c. The fire support coordinator supervises the establishment of communication and the internal arrangement of communication equipment within the FSCC.

d. Each fire support agency and each staff section represented in the FSCC is furnished the necessary means of communication and operating personnel by its parent unit.

121. Duties of Personnel

Generally, the duties performed by personnel in the FSCC are the same at higher and lower echelons and are similar to the duties of personnel at the division FSE as listed in paragraph 114.

Section IV. PROCEDURE

122. General

a. *Commander's Concept of Operation.* The concept of operation is a verbal statement or graphic portrayal of a commander's assumptions or intent in regard to an operation. The concept is designed to give the overall picture of the operation and is included in plans and orders primarily for additional clarity of purpose. The commander's guidance and general plan for the employment of available fire support, to include his guidance and general plan for the employment of nuclear weapons, will be included in the concept of operation.

- (1) The commander may announce his concept of operation either orally or in written form. When written, the concept is normally contained in the operation order. However, if the concept is lengthy, it may be issued as a separate annex to the operation order.
- (2) The fire support portion of the commander's concept of operation is the basis for the fire support plan (d below).

b. *Guidance for the Employment of Nuclear Weapons.* To facilitate planning, the commander's basic guidance for the employment of nuclear weapons should be included in the standing operating procedure (SOP). Modifications and additional guidance are included in the commander's planning guidance. The commander's guidance for the employment of nuclear weapons should include—

- (1) The desired result of the nuclear attack. This should include the damage or casualties desired, or both; e.g., destroy the target.
- (2) Contingent requirements, for example, no significant fallout, target(s) to be left undamaged, etc.
- (3) The degree of risk to which the commander is willing to expose his own troops; for example, no more than negligible risk to friendly troops.
- (4) General scheme of employment of nuclear weapons. This may include—
 - (a) Integration of nuclear and nonnuclear fire.

- (b) Tactical use of fallout.
- (c) Priority for attack of various type targets.
- (d) Allocations, to include weapons retained as a reserve.

c. Operation Order. The bulk of the information and instruction pertaining to fire support is contained in the fire support annex to the operation order. However, the operation order does include sufficient information and instruction to give the supported units an indication of the fire support available to them. Fire support agencies not under the command or control of the force commander are mentioned in paragraph 1b of the operation order. Fire support agencies under the force commander's control are listed in appropriate subparagraphs of paragraph 3 of the operation order; as a minimum, the artillery organization for combat is given in paragraph 3.

d. Fire Support Plan. The fire support plan is the announcement of the commander's decisions concerning the employment of fire support. It is the coordinated and integrated plan for the employment of all fire support available to the commander. The fire support plan amplifies the fire support portion of the commander's concept of operation (*a* above) by providing specific information and instructions relative to fire support.

- (1) The fire support plan is published as an annex to the force operation order. Its form is, in general, that prescribed for the operation order.
- (2) Appendixes to the fire support plan annex are published as required in whatever form is most appropriate. Listed in (*a*) through (*d*) below are some of the appendixes that may be required:
 - (a) Air fire plan.
 - (b) Artillery fire plan.
 - (c) Naval gunfire plan.
 - (d) Other plans, instructions, or information as appropriate.
- (3) The fire support coordinator is responsible for the preparation of the fire support plan and for insuring that the fire plans for the various means of

fire support are coordinated throughout their development and use. He is further responsible during the operational phase for the coordinated application of fire support, but the details of that application are the responsibility of the representatives of the fire support agencies concerned.

123. Attack of Targets

a. The attack of targets is based on reports by forward observers, aerial observers, or other sources and agencies, or on fires called for by the higher or supported unit or force. More than one means of fire support may be used to attack a target.

b. In selecting the means of fire support for a particular mission, the supported or force commander and the fire support coordinator may consider the following factors:

- (1) Nature and characteristics of the target to include recuperability.
- (2) Effect desired on the target, such as the effects obtained by neutralization, destruction, interdiction, harassing fires or use of fallout producing nuclear bursts.
- (3) Characteristics, capabilities, and limitations of the weapon and its ammunition; e.g., accuracy, mobility, range, yield, and detailed effects.
- (4) The most economical means of delivery.
- (5) The allocation of fire support.
- (6) Type of fire support requested.
- (7) Availability, based on allocations and established priorities, of the various types of fire support means and their ammunition supply.
- (8) Relative difficulty of ammunition supply.
- (9) Speed of execution.
- (10) Problems of weather and terrain.
- (11) Vulnerability of the means to be used.
- (12) Effect of suppression of friendly fires during an air strike, if required.
- (13) Communication facilities available.
- (14) Safety of friendly troops.

(15) Predicted post-strike condition of the target area.

(16) Tactical benefits to be gained.

c. During the planning phase, requests for allocation of fire support are forwarded through normal command channels as are requests for modification or change in the fire support allocated in the fire support plan.

124. Execution of Fire Support

a. Requests for immediate fire support are transmitted over normal artillery, air, and naval fire channels.

b. When considering the attacks of a target, the fire support coordinator or his representative determines which support agency can best attack the target.

- (1) When the mission can be fired by the artillery available to the echelon concerned, it is fired in the normal manner. If other artillery fires are required, they are requested from the next higher artillery echelon.
- (2) When naval fire is to be employed to attack a target, it is fired by the direct or general support ship(s) of the echelon concerned using naval fire pro-

cedures. If additional naval fire is required, assistance is requested of the next higher echelon.

- (3) When tactical air is to be employed to attack a target, it is requested on the air request net to the tactical air support element at army. Such requests are monitored by intermediate echelons which indicate approval by remaining silent.
- (4) When air defense artillery is to be employed to attack a surface target, it is requested through the ADE at FATOC or ICTOC.
- (5) When nuclear fire is to be employed to attack a target, the fire support coordinator or his representative determines which fire support agency can best attack the target. The decision to employ nuclear weapons rests with the commander having an allocation of nuclear weapons or his designated representative.

125. Fire Support Coordination Charts and Records

Examples of fire support coordination charts and records are shown in appendix VI.



CHAPTER 7

ARTILLERY IN OPERATIONS UNDER SPECIAL CONDITIONS

Section I. GENERAL

126. Definition

Special operations are those operations in which terrain, weather, the nature of the operation, or a combination of these create the need for special techniques, tactics, training, or equipment.

127. General

In operations under special conditions, so far as the artillery is concerned, normal tactics are not changed, but the techniques of operation may be modified. This chapter will discuss the modifications to be considered for certain types of special operations.

Section II. AMPHIBIOUS OPERATIONS

128. General

The initial employment of artillery in the amphibious operation varies considerably from employment in land warfare.

a. Artillery normally does not engage in the preliminary preparation for the beach assault. Usually, artillery does not enter action until after the infantry attack is initiated.

b. As in land warfare, the amount, type, and organization of the artillery force must be suited to the needs of the operation. However, the types of ships and the characteristics of the landing area may prevent the landing of the quantity and caliber of artillery required by the strength of the enemy and the characteristics of the area. In this situation, a compromise decision must be made.

c. Initial positions are usually very small in area and near the frontlines.

d. The limitations imposed by a shortage of specific transportation means creates difficulties in—

- (1) Occupation of positions.
- (2) Supply and resupply, particularly of ammunition.
- (3) Establishment and maintenance of communication.

e. The landing forces in an amphibious operation are organized in the following sequence:

- (1) Organization for embarkation.
- (2) Organization for the ship-to-shore movement (landing).
- (3) Organization for operations ashore.

f. Centralized control of artillery is lost from the time of embarkation until reorganization ashore. This lack of control reduces the flexibility of artillery support.

g. For further details on amphibious operations, see FM 100-5, FM 31-12, and the 60-series field manuals.

129. Initiation of Planning

a. The landing force commander begins planning on receipt of the initial directive for the operation. The artillery commander with the landing force insures that liaison is established immediately between all artillery echelons. As the broad plans for the operation are formulated, the artillery commander of the landing force issues artillery training directives to lower echelons to ready them for combat along the lines of the proposed plan. On approval of the fire support plan by the landing force commander, the necessary instructions are prepared to put the plan into effect. The fire support

plan furnishes complete tactical and technical instructions to the fire support means with the force.

b. In a corps operation, each division artillery commander and his staff initiate planning on receipt of the corps warning order. The details of the division fire support plan are completed as soon as possible after the corps fire support plan is received.

c. The division fire support plan will be detailed. Artillery unit plans will contain pertinent extracts from and references to the division fire support plan and to the unit standing operating procedure. Plans of direct support artillery are based on the division fire support plan and plans of supported units.

130. Estimates

a. The landing force commander, in preparing his estimate of the situation, requires his artillery commander to make an estimate of the artillery requirements. The artillery commander's estimate of requirements must be changed continually so that recommendations and plans can be kept abreast of the situation.

b. Normally, the initial operational directive indicates the means to be placed at the disposal of the landing force commander. From the number and size of the major units allocated and the terrain, mission, and enemy situation, the landing force commander estimates the artillery requirements to support the force. This estimate is made initially to determine the amount and type required of—

- (1) Cannon and missile artillery.
- (2) Ammunition.
- (3) Special equipment.
- (4) Shipping, landing craft, helicopters, and amphibian vehicles.

c. In arriving at the estimate of artillery requirements, the factors listed below are given special consideration:

- (1) *Mission of the landing force.* In an amphibious operation, the mission directly affects the shipping and resupply requirements. The estimated duration of the operation will have its greatest effect on the amount of ammunition embarked. If the landing is to be followed by sustained land op-

erations beyond the beachhead, shipping allocations must be adequate to support artillery ammunition resupply and replacement requirements. For a short operation, emphasis is placed on initial embarkation of ammunition, whereas a long campaign necessitates provision for resupply of virtually all equipment in addition to ammunition.

- (2) *Plan of maneuver of the landing force.* Artillery requirements will vary with the plan of maneuver of the landing force as well as with the relative location of landing beaches. The artillery support problem is much simpler if the assault force lands on adjacent beaches in a single sector. The plan of maneuver after seizure of the beachhead strongly influences the amount of artillery required.

- (3) *Terrain, weather, and hydrographic characteristics.* In addition to the information normally required concerning weather and terrain in the objective area, special information is needed pertaining to beach area. Gradients and widths of beaches, prevailing surf conditions, presence of submerged barriers, texture of sand, and existence of obstacles inland from the beach will affect the types and number of ships, landing craft, amphibian vehicles, aviation, and special equipment required by artillery in getting on and across the beaches.

- (4) *Enemy capabilities.* Enemy capabilities, based on enemy strength, composition, disposition, status of supply, reinforcements, morale, and training, must also be considered and evaluated in order to determine artillery requirements.

- (5) *Employment of other fire support means.* Estimates of artillery requirements should include consideration of landing force weapons such as tanks and air defense artillery, naval gunfire, and close air support. The required ammunition supply rate for all these weapons must be considered con-

currently with resupply difficulties in order to permit them to assume an effective artillery role for the specified period of the operation.

d. Close air support provides an important means of fire support for assault units, particularly in the early stages of an operation. While close air support cannot replace artillery fire, the amount and type available must be considered in determining overall artillery requirements.

e. Naval gunfire is suited to assume some of corps artillery's missions such as reinforcing the fires of division artillery and the execution of general support missions. When planning to employ naval gunfire, its shortcomings must be kept in mind. It cannot be readily massed and its ability to deliver precision or close supporting fires may be seriously handicapped during periods of reduced visibility. If the operation progresses inland beyond the range of naval guns, the estimate must provide for the landing of artillery of the proper type to replace its fires.

f. The estimate of artillery requirements should be written, because of its operational importance and the desirability of keeping a permanent record of the estimate, for assistance in future planning. In determining the artillery requirement, each of the factors discussed in a through e above are considered in turn.

131. The Artillery Plan

a. *Organization for Combat.* The principles of organization for combat that apply to land operations are applicable in amphibious operations. When combat elements of the division are to land on widely dispersed beaches, it may be necessary to attach some division artillery to the assault elements. Other divisional artillery units should be given a mission of general support or reinforcing. Centralized control of division artillery is accomplished as soon as practicable after landing to provide flexibility of fire support. Corps artillery battalions should be either attached to division initially or assigned the mission of reinforcing division artillery. Amphibian vehicles to be used by the artillery for ship-to-shore movement should be attached to the artillery for embarkation and

for the period necessary to land the artillery and its ammunition. Armored amphibians may be assigned primary and secondary missions as outlined in FM 17-34. When these units are attached or placed under the operational control of division artillery, they will normally be employed in company-sized units.

b. *Organization for Embarkation.*

(1) Division artillery should normally be organized for embarkation as a separate embarkation unit. Direct support artillery will normally embark with the supported unit. The following personnel are usually embarked as indicated:

- (a) Corps artillery and division artillery commanders with their fire support coordination personnel are normally embarked with their respective commanders.
- (b) Aerial observers and pilots are normally embarked in the ships transporting the artillery observation aircraft.
- (c) Forward observer and liaison parties are embarked with their appropriate supported units.
- (d) The remainder of the artillery should be embarked in such a manner as to maintain the tactical unity of the organizations.

(2) It has been found that the landing ship, tank (LST), is, in most instances, the best ship for transporting artillery. If it is impractical to beach LST's in the target area, medium and heavy artillery should be loaded in landing craft, utility (LCU), or landing craft, mechanized, MK VIII (LCM(8)) and transported to the objective in landing ships, dock (LSD). A less desirable means of transport is the attack (APA) or the attack cargo ships (AKA).

c. *Zones of Fire.* Principles for establishing zones of fire in land operations are applicable to amphibious operations. However, a beach-head operation may be likened to a salient, in that the artillery may have a field of fire greater

than 3200 mils. It is very difficult in such a situation to mass the preponderance of the division artillery firepower, and it may be several days before all artillery units participating in a landing can prepare the necessary positions to cover zones other than their normal zones of fire. With proper planning and by assigning contingent zones of fire, some massing of artillery fires may be possible. Assignment of normal and contingent zones of fires should provide for massed fires on suspected areas of enemy concentration. Zones are normally assigned laterally; however, zones in depth may be assigned. In determining the zones of fire, the artillery commander must consider the necessity for covering dead spaces in the zones of action of assault units. Units to the flank may be able to provide fire into spaces defiladed from other units. In such cases, crossfire must be employed for maximum fire support. Minimum range considerations may also dictate the use of crossfire in order to provide fire support early in the operation while the assault units are expanding the beachhead. If crossfire is impractical, contingent zones of fire may be assigned to insure coverage of defiladed areas.

d. Position Areas. The landing force artillery commander must coordinate the assignment of position areas for the artillery units with the force. Each lower echelon artillery commander must further subdivide the assigned area for the units of his command. A map and photo-reconnaissance will be made, considering—

- (1) The ability of the artillery to cover the designated zones of fire.
- (2) The coordination of position areas with the location of supply points, engineer construction, and routes of communication.
- (3) In the limited space of the beachhead, few good position areas will be available and many desirable features such as defilade, concealment, dispersion, and good supply roads must be partially or completely sacrificed.
- (4) Areas should be selected to provide the maximum possible security for the comparatively immobile artillery. Me-

dium and heavier artillery must be located so that a temporary change in lines will not expose it to enemy small-arms fire.

- (5) Positions that are accessible from the proposed landing points should be chosen.

e. Target Information. Artillery intelligence exploits every available source and agency to locate targets during the planning phase. Aerial photographs, taken at frequent intervals, must be made and studied by all echelons. Schedules of targets and priority for attack are made by the fire support coordination agency. These schedules are kept current by study of the latest aerial photographs and post strike analysis reports of air strike and preliminary bombardment by the advance force. At every opportunity, corrections are furnished to those headquarters previously issued the schedules of targets.

f. Survey. Artillery intelligence exploits every possible source and agency to determine the amount of survey control existing on or near the beachhead. Each echelon of survey makes detailed survey plans based on complete map and photographic reconnaissance. Survey sections are landed as early as possible in order to insure maximum capability for massing fires.

g. Communication.

- (1) *Radio.* The control and coordination of artillery units of the landing force during the ship-to-shore movement makes it imperative that a communication plan meeting the requirements of simplicity, reliability, and flexibility be placed in effect. The artillery communication plan provides for communication between the force artillery commander, all subordinate elements, and the tactical logistics group, whether they are afloat or ashore. It must provide communication between the artillery commander and subordinate elements; to direct support artillery; and to forward observers and liaison officers with the infantry, whether afloat or ashore. Radio channels assigned must be utilized to establish communication on the simplest

and most flexible net possible. A detailed radio plan to include all frequencies of artillery units is usually included as a tab to the artillery appendix to the fire support plan annex. During the planning phase, communication equipment that will be needed by other supporting units to communicate with the artillery must be determined and requested from the supply source; these units are included in the artillery communication plan.

- (2) *Wire.* Complete wire communication is established at the earliest practicable moment. Wire communication plans are detailed and include the proposed line route maps of all lower echelons. Decentralization of wire laying is planned. Wire teams are briefed with maps and aerial photographs on routes for laying of wire nets.

h. Ammunition Supply. The artillery commander of each echelon must have a detailed ammunition plan. This plan should provide for the rapid unloading of ammunition and its delivery to cannon and missile artillery units in firing positions ashore without confusion as to type, size, type of fuzes, warheads, propellants, or powder lot number. In addition, each plan provides for delivery of ammunition to firing units or supply points ashore with minimum rehandling en route. It must be determined whether palletizing all or a portion of the artillery ammunition will accelerate or delay its unloading. Consideration should be given to the amount of organic transportation that will be landed and its availability for handling ammunition ashore. Coordination of ammunition unloading with shore party and control groups personnel is necessary to insure that ammunition-carrying amphibious vehicles are not detained or diverted to other use during the unloading phase. To reduce beach congestion, consideration should be given to aerial delivery of ammunition supply direct to artillery positions by helicopter.

i. Time of Landing. The time of landing of the division and corps artillery depends on such variables as availability of position areas, need

for artillery ashore, conditions of beach entrances and exits, and the ability of the shore party to effect the landing. Direct support artillery lands with the supported units. Artillery plans usually state that division and corps artillery units will land on order of the division and corps commanders, respectively. The corps artillery and division artillery commanders will make a continuous study of the situation ashore in order to recommend the landing of elements of their respective commands at the most propitious time. Their study is based on all available information that is received on the command ships and particularly on the reports of forward observers and liaison officers ashore. The reconnaissance parties recommend to the division artillery or corps artillery commander the proper times for debarkation and landing of the remaining artillery elements.

j. Reconnaissance. During planning, a continuous reconnaissance is made by utilizing all available maps and photographs of the objective area. If practicable, an air or seaborne reconnaissance is made of the beach area and the immediate terrain inland by artillery officers to select the best landing beaches, position areas, routes, and observation facilities. The plan for the ground reconnaissance includes the size of the party and its composition. Appreciably larger parties than are used in normal land warfare must be employed to facilitate the selection and preparation of position areas to enable immediate entry into action of the units on landing. Sufficient guides and communication, survey, fire direction, local security, and pioneer personnel are included to insure thorough reconnaissance and rapid preparation and occupation of positions. During planning, arrangements should be made with the shore party for that unit to reconnoiter for artillery landing points and artillery LST beaching areas.

k. Ship-to-Shore Movement. Planning the ship-to-shore movement consists of determining the best procedure for landing the artillery elements. The best procedure will be determined after consideration of the factors listed in *a* through *j* above. This will mean provision of boats or amphibious vehicles, depending on hydrographic conditions, in sufficient quantity

at the proper place and time. The debarkation schedule and the boat assignment tables will be set forth in this plan.

l. Artillery Support of the Beach Assault. When possible, artillery is employed to support the beach assault. Considerable advantage accrues to the infantry, when the artillery is set up to give normal and continuous fire support throughout the beach assault. Artillery can bring concentrations in close to the infantry, place accurate destruction fire on targets susceptible to destruction, and fire with accuracy at night and during periods of low visibility. Such support is possible in atoll warfare, in waterborne envelopments, and when on large islands or land masses the geographical and tactical situation is favorable. The artillery units may be emplaced on islands adjacent to the assault beaches or on a peninsula or promontory from which fire can be placed on the proposed landing beaches. The plan must provide detailed plans for supporting fires. The primary concern is that the main landing area be within effective range so that the artillery can support the landing area and the continuation of the attack ashore.

132. Rehearsal

Because of the many details involved, it is essential that the plans for an amphibious operation be tested by rehearsal to insure that all units are familiar with the embarkation and debarkation procedures and techniques. The rehearsal should simulate as closely as possible the conditions to be expected in the objective area, to include firing of live ammunition by the units participating.

133. Movement to the Beach

In an amphibious operation, certain elements of an artillery unit must land prior to their artillery weapons. These elements include forward observers, liaison personnel, reconnaissance parties, and if possible, the survey section. A planned sequence is essential to an orderly and well-controlled landing so that observers will be in position, liaison will be established, and reconnaissance and survey will be complete to the extent possible before the firing batteries arrive on the beach.

a. The sequence of landing for a ship-to-shore movement complete with all elements, is as follows:

- (1) Forward observer parties are landed with each infantry rifle company.
- (2) An artillery liaison party lands with each battalion command post. Forward observers and liaison officers keep their artillery headquarters informed as to suitable landing beaches, exits from the beach, the condition of position areas, and the progress of elements ashore. When division artillery units are attached to battalions or brigades, provisions must be made for keeping these units informed of the situation, and for providing position areas ashore.
- (3) The artillery reconnaissance parties are landed as early as the situation permits to reconnoiter the tentative position areas and select final positions for the necessary installations. After considering the time and space factors involved and the situation ashore, the reconnaissance party commander will recommend to the appropriate headquarters the time to debark the remainder of the unit. Artillery survey section is landed as early as the situation permits so that maximum survey of the position area can be accomplished prior to the arrival of the firing batteries.
- (4) After the reconnaissance has been completed and when the beach areas are reasonably free from enemy fire, the artillery unit is landed on request of the reconnaissance commander. On debarkation, the unit assembles in a rendezvous area afloat and then proceeds to its landing beach and thence to its position area. The remainder of the unloading activities are a ferrying operation, moving ammunition and other supplies, and the remaining personnel and equipment from the ships to the artillery position areas.
- (5) The reconnaissance parties of division artillery and corps artillery headquar-

ters batteries are landed at about the same time as those of their subordinate battalions. The remainder of these batteries are landed at the request of the reconnaissance party commander. The division artillery executive officer is normally placed in charge of division artillery operations ashore until the commander lands. The assistant corps artillery officer or corps artillery executive officer is normally placed in charge of corps artillery operations ashore until the corps artillery commander lands.

- (6) The corps artillery and division artillery commanders and fire support element personnel move ashore with the corps and division commanders as the command post of the echelon is landed. Corps and division fire support element personnel usually displace ashore in two echelons; the second echelon

displaces after the first is in operation ashore. Responsibility for coordination of fire support passes from the naval attack force to the landing force when the landing force commander establishes his command post ashore.

- b. When the artillery is to be landed from beached LST's, the number of elements required to execute the ship-to-shore movement will be reduced. The LST's are moved to the inner LST area to launch the reconnaissance parties. Then, at the request of the reconnaissance party commander that the remainder of the unit be ordered ashore, the LST's will be beached if the tactical situation on the beach permits, the beach is sufficiently clear of enemy fire, and if hydrographic conditions permit. The LST's carrying medium and heavy artillery units must be beached for the debarkation of those units, and the LST's carrying ammunition will also be beached to facilitate unloading.

Section III. NIGHT ATTACKS AND RAIDS

134. Night Attacks

- a. The artillery supporting the night attack must complete necessary survey, establish communication, and arrange for liaison before dark. All plans and arrangements must be simple and well coordinated. Supporting fires consist mainly of concentrations fired on a time schedule or on prearranged signals.

- b. The artillery should concentrate upon disrupting the system of final protective fires of enemy automatic weapons and upon counterbattery fires against enemy artillery firing barrage and similar missions. If an artillery preparation is fired, it should be short and violent. In determining whether a preparation is to be fired, the probable effects of the preparation in supporting the maneuver must be weighed against the effect of a surprise attack by the

force. Fires are planned to isolate the zone of attack and to protect the supported unit upon its arrival at the objective or during its withdrawal from action.

135. Raids

Artillery support during a raid consists of neutralizing fires placed on known and suspect enemy defense elements of the position to be raided and of isolating the area by fire. Artillery does not usually accompany the raiding forces. It provides support from positions within friendly lines. In general, artillery preparation is inadvisable. Counterbattery fires should be employed as necessary during both the advance and withdrawal of attacking troops. In the withdrawal, smoke may be used for screening.

Section IV. MOUNTAIN OPERATIONS

136. General

The standard artillery units of corps and divisions can operate successfully in mountains, although mountain warfare imposes special prob-

lems concerning mobility, fires, communication, and tactical employment (FM 100-5). Personnel working in high altitudes perform their duties with marked loss of efficiency because

the decrease of oxygen causes a need for more frequent rest periods. Commanders must consider this additional time factor when planning for mountain operations. This section summarizes the problems which require particular attention in mountain operations (FM 31-71 and FM 31-72).

137. Mobility

The movement of artillery, in general, is restricted to roads and improved trails. This characteristic is emphasized in mountainous areas because the scarcity of adequate roads and trails greatly limits the choice of avenues of approach to the extent of canalizing the movement of artillery. In addition, the winding roads and steep slopes, characteristic of mountainous areas, create difficulties in turning towed weapons and in getting them into and out of positions. Towed light artillery can sometimes be manhandled under these conditions. Aeropack artillery can be moved on unimproved trails and thus can be used well forward and in positions inaccessible to other artillery. Helicopters can be used to transport towed light artillery into areas that have no road access. Self-propelled artillery, although able to negotiate sharp turns and capable of ascending and descending steep slopes, is hampered by tracks slipping on icy roads.

138. Fires

a. Artillery fire is not as flexible in mountainous terrain as on the plains, because the choice of positions is restricted and masks are high. However, since howitzers have arching trajectories, they are well adapted to mountain warfare. High-angle fire is employed frequently to reach over masks, behind crests, and into deep valleys. Adjustment of fires is difficult for targets located on peaks and reverse slopes. Guns, with their flat trajectories, cannot be used close to the front except in direct fire roles. Normally, guns are employed far enough to the rear to take advantage of an increased slope of fall. Some artillery may be moved forward to provide long-range interdiction fires.

b. The great majority of artillery fires in the mountains must be observed, especially close support and defensive fires. Observation parties

must be enlarged to include porters for carrying equipment. Aircraft and helicopters increase the range of observation and permit searching of spaces into which ground observers cannot see.

c. Unobserved fires are generally unreliable in the mountains. Meteorological conditions change rapidly and registration corrections for high-angle fire are valid for only short periods. Effective transfer of fires is difficult, since altitudes within transfer limits vary so greatly. It is often necessary to fire a check round in the vicinity of a target before firing for effect on the target.

139. Ammunition

Impact high explosive is very effective in rocky ground, scattering stones which in themselves become missiles. Experience has shown, however, that protracted bombardment of defensive positions in the mountains with impact explosives produces few enemy casualties. Artillery fires may be used to initiate rock or snow slides to block supply routes or engulf enemy defenses. Variable time and time fuzes are effective, particularly against troops held in reserve on reverse slopes. Smoke is used but is difficult to control because of winds. For information concerning nuclear weapons effects in mountains, see FM 101-31.

140. Targets and Target Location

a. Passes and defiles which form bottlenecks in the enemy supply route are ideal artillery targets. Interdiction of such targets is usual. Fire against targets on forward slopes and crests does not often produce decisive results. In addition, since the defender is usually dispersed in small groups, massed fires of many artillery weapons is unusual and expensive.

b. Direct observation by ground or aerial observers is the most reliable means of locating targets in the mountains. Ground observers usually will be restricted in observation to the next hill mass. Deep defilade makes it difficult to locate enemy weapons. Army aviation should be used to search areas defiladed from ground observation. However, high performance aircraft have difficulty in performing observation

missions while avoiding mountain hazards. Much reliance must be placed on shell reports because of the inefficiency of radar and sound ranging in the mountains. Also, radar surveillance is adversely affected by ground clutter, and sound ranging is very difficult because of echoes. Map and aerial photograph study discloses probable gun locations since the enemy is also restricted in his choice of gun positions. Deep shadows and uneven illumination increase the difficulty of interpreting aerial photographs.

141. Control

Terrain compartmentation often requires the use of multiple columns in the attack. Small forces requires artillery support and it may be necessary to decentralize control of artillery to provide support for all columns. Portions of general support artillery units may be detached in order to provide support for units that are separated by terrain features. How-

ever, this procedure tends toward decentralization and loss of control, and is not advisable unless absolutely necessary to provide fire support.

142. Communication

Main wire routes are restricted to roads and are vulnerable to breaks caused by enemy artillery or friendly traffic. Cross-country wire is difficult to maintain and is often broken by rock and snow slides. The utilization of army aircraft to lay and maintain wire during mountain operations aids in solving this problem. Radio communication is used extensively. Antennas of very high frequency sets, either AM or FM, require careful selection of sites because of the line-of-sight characteristics of high frequency radio waves. The use of relay stations (either ground or air) is more prevalent when operating in mountainous terrain.

Section V. JUNGLE OPERATIONS

143. General

Jungle combat is designated a special operation primarily because the inherent difficulties of terrain, climate, and visibility complicate the vital problems of command, movement, supporting fires, supply, and evacuation. Normal procedures must be modified, and specialized equipment must be employed. Training for jungle operations must include thorough indoctrination on life in the jungle, stressing the advantages and disadvantages of jungle warfare and personal hygiene, and care of equipment in the jungle (FM 31-30).

144. Mobility

Jungle conditions impose greater restrictions on the movement of artillery than those encountered in other types of operation. Suitable roads and improved trails are almost nonexistent away from settled areas. Roads must be constructed as the movement progresses and must be maintained continuously, since jungle growth will quickly reclaim neglected or abandoned roadways. Special equipment is needed to insure rapid and efficient construction of roads that will withstand tropical conditions.

Equipment includes tractors capable of traversing boggy and swampy terrain; bulldozers for use in road-building and in preparing positions; and, in some cases, boats for crossing rivers and flooded swamps and for displacing along shorelines and rivers. The use of helicopters to move artillery and resupply ammunition will materially increase the mobility and flexibility of artillery in jungle operations.

145. Fire Capabilities and Limitations

a. As in mountain operations, the flexibility of artillery fire is reduced by excessive mask, scarcity of suitable position areas, lack of accurate maps, and restricted observation. High-angle fire will often be required to clear tall masks surrounding positions. Direct fire missions will frequently be required to defend positions against ground attack. Caves and pillbox emplacements can be destroyed by field artillery missiles or by heavy and medium cannon artillery used in a direct fire role. Chemical agents may be used for casualty effect on those prepared positions and emplacements that are relatively invulnerable to other weapons. Light artillery can be used to defoliate trees and na-

tural camouflage to expose hidden emplacements.

b. Adjustment of fire on close-in targets is often conducted by the observer listening for the whistle and burst of the shell and bringing the burst on the target by *creeping*. When this method of adjustment is used, firing data must be carefully checked at the fire direction center. Observers with adjacent units can assist in the adjustment by giving their sound sensings.

c. Under weather conditions normal to tropical areas, meteorological data are not subject to rapid change and meteorological corrections are reasonably accurate. However, maps are usually so poor that map data are inaccurate and vertical control is often nonexistent. When artillery registrations are current, surprise fires by transfers are effective.

146. Observation

a. Observation is extremely restricted by jungle growth and is often limited to the immediate vicinity of the observer. Observer parties must be well forward, often accompanying patrols, so that they can use their limited observation to best advantage and be aware of the location of forward elements. Parties must be large in order to carry equipment, lay wire, and provide security. Checkpoints and known locations are rare and observers must use initiative in devising methods of spotting fire. The observer must know the slope of fall of the projectile and the height of the trees in the vicinity of the target to avoid bursts over friendly troops. Often, close-in targets can be engaged only through use of high-angle fire. On rare occasions, some observation advantage is gained from high trees and dominating terrain. Aerial observation from Army aircraft is efficient for location of distant targets, such as enemy batteries, troop concentrations, bivouacs, and boat movements; however, it is usually necessary for these planes to fly over enemy territory to gain information of specific targets.

b. Army aircraft can be profitably utilized in jungle warfare in adjusting fires, locating friendly lines, spotting targets for air strikes, delivering supplies to forward units, and acting as relay or control in artillery radio nets. Ob-

servers in aircraft can work with ground observers to adjust artillery. Often, although the ground observer can hear the rounds fall, he cannot see them, even though he can see the target; the air observer can see the rounds but knows only the approximate location of the target. A combination of their sensings gives the fire direction center a better picture of the adjustment and speeds up the delivery of effective fire.

147. Survey

Survey is slow and difficult in the jungle. Control points are few and maps are poor. However, since the advance of the infantry is slow, extension of survey can usually keep up with the forward elements. Target area survey is usually very restricted, limiting most survey operations to position areas connected by traverse to observers. Traverse legs are necessarily short, and vertical control is usually extremely limited. Machete crews assist the survey teams.

148. Target Location

Patrols are the most lucrative source of target locations. Sound, flash, and radar may be used for locating targets, but they are restricted by tree canopy, slow survey, poor trails for moving heavy equipment, and necessity for clearing fields of operation for the radar sets.

149. Positions

There are few good gun positions in the jungle. Usually areas must be cleared with bulldozers and engineer power tools; this is especially difficult because arcs of fire must be large. In clearing fields of fire, care must be taken to disturb the tree pattern as little as possible to avoid disclosing the position to enemy air. In wet weather, roads into positions must be corduroyed and platforms must be built under the weapons. Weapons should be closer together than in open terrain to facilitate control and security.

150. Security

When the tactical situation permits, the direct support artillery should be located within the area of the infantry reserve to take advantage of the protection provided by the riflemen.

The batteries of a battalion-size cannon unit should be close enough to each other for mutual protection. Each battery must establish a perimeter defense, and the defense systems of the batteries must be integrated into a battalion defense plan. Security must be stressed in displacing to new positions, since the jungle aids the enemy in preparing an ambush. The march security precautions discussed in FM 31-21 are applicable.

151. Ammunition

a. Supply and storage of ammunition is a critical problem in the jungle and requires constant effort and attention on the part of all concerned. Since many missions are fired close to friendly troops, sorting of ammunition must be carefully supervised to insure uniform lots. Ammunition must be stored with care to protect it from moisture, since exposed powder deteriorates rapidly in the humid jungle.

b. White phosphorus smoke is very often used during adjustment to facilitate observation and to mark targets for air strikes. Large-scale smoke screens are not as common as in open terrain. Proximity fuze shell and time fire are generally ineffective because heavy overhead growth reduces the fragmentation effect. Quick fuze produces tree bursts below the canopy and is especially effective in clearing

out snipers. Delay fuze, activated by the trees, usually gives a ground burst similar to that obtained by quick fuze in open terrain. As a result the proportion of delay fuze to quick fuze is usually greater than normal in the jungle. Heavy undergrowth smothers the shell burst, limiting the burst radius; therefore, artillery fire can be brought in closer to friendly frontlines, though more ammunition must be used to obtain good area coverage. Care must be taken to insure that tree bursts do not occur over friendly troops. Chemical shell may be very effective because of the longer target exposure resulting from low wind speeds and stable meteorological conditions under the jungle canopy. For information concerning nuclear weapons effects in forests, see FM 101-31.

152. Communication

In the jungle, radios are used extensively by forward observers and survey parties; relay stations, such as aircraft, are normally required. Telephone lines are laid when possible, and forward switching centrals are often installed. Wire laying by light aircraft is economical and may be employed when possible. Wire crews must be protected while they are laying and repairing wire, and extra men are required to act as porters. Communication equipment must be protected from dampness, mildew, and mold.

Section VI. DESERT OPERATIONS

153. General

The principal problems confronting artillery engaged in desert warfare (FM 31-25) are observation and maintenance. Desert terrain varies widely from low, flat, sandy plains to high, rocky, mountainous areas (FM 100-5). Temperatures also vary from torrid to subzero according to the latitude and altitude. Arid climate, with lack of vegetation, is the only common characteristics. Therefore, artillery tactics and plans must be varied to suit the conditions of terrain and climate.

154. Observation

a. Ground observation of artillery fires in hot, flat, sandy desert areas is very difficult

because of heat waves, mirages, lack of elevated positions, and frequent duststorms. Distances observed over flat terrain are deceiving and are usually underestimated. The absence of identifiable landmarks reduces the value of maps. Aerial observation, while much better than ground observation, is still hampered by the above factors.

b. Observation in mountainous desert areas is subject to the limitations discussed under mountain operations.

155. Maintenance

Frequent duststorms and sandstorms require a constant, intensive maintenance program to protect all materiel from the abrasive action of

the fine dust and sand. Wear on gun tubes, slides, and all bearing surfaces, and scouring

and pitting of optical instruments are greatly increased by exposure to these conditions.

Section VII. COMBAT IN TOWNS

156. General

As most towns are readily bypassed without materially affecting the commander's plan of maneuver, only those that occupy key terrain or constitute islands of resistance so large as to be serious threats to future operations, will normally be attacked. Outlying areas in which there are good fields of fire become the enemy's first line of defense. This line may be fortified with anything from hastily prepared positions to mutually supporting concrete emplacements. If these positions are penetrated, the defender must fall back to the town. The attack of the town is divided into three phases.

- a. Isolating the town.
- b. Penetrating the defender's initial position.
- c. Advancing through the town.

157. Artillery Support of the Attack

a. After the town has been isolated, the artillery commander must prepare to support the two remaining phases of the attack. In supporting the second phase, which is to penetrate the defender's initial position, artillery will be centralized and will operate in a normal manner. The artillery commander must have artillery capable of destroying fortifications and of sufficient range to neutralize enemy artillery and provide interdiction fires. In the second phase, the forces holding the town will normally have good observation, thus forcing friendly troops to displace at night or along concealed routes. With the successful completion of this phase, the artillery must displace quickly to support the third phase of the attack.

b. The third phase of the attack, which consists of the advance through the town, will often require the force commander to decentralize his command into small units which must attack through separate corridors of the town. This action may necessitate some decentralization of the artillery, particularly the direct fire elements. Observation is usually poor, and the

artillery must depend almost entirely on forward observers for conduct for fire. Communication with forward observers is impaired by buildings that interfere with the line-of-sight characteristics of artillery FM radios. Artillery delivering direct fire should be self-propelled and have sufficient firepower to destroy designated buildings. Artillery providing close support to attacking troops must be capable of high-angle fire and, if opposing forces are close together, it may be necessary to withdraw the attacking forces while artillery concentrations are being fired. The greater part of indirect fires, however, will be precision fires.

c. After a built-up area has been hit by nuclear weapons it may become a formidable obstacle and may provide an excellent defensive area. If necessary, the plan for employment of nuclear weapons against a town should provide relatively clear passage through some portion of the town. However, the enemy must be prevented from reoccupying the town after it has been attacked by nuclear weapons. For further information concerning nuclear weapons effects against built-up areas, see FM 101-31.

158. Field Artillery Support of the Defense

In the defense of towns, artillery is so emphasized that it can fire against any attempted envelopment of the town or against hostile forces within range that are attempting to bypass the town. The supporting artillery must also be able to deliver the preponderance of its firepower on the critical avenues of approach and to fire final protective fires in the form of barrages covering close-in approaches, such as streets, open areas, and areas containing lightly constructed buildings. If the enemy makes a penetration, the artillery should be able to deliver the preponderance of its firepower against the penetration, and support the counterattack. FM 31-50 covers the phases of combat in fortified areas and towns.

Section VIII. RIVER CROSSINGS

159. General

Wide, unfordable rivers exercise considerable influence on military operations because they impose restrictions on movement and maneuver. They constitute obstacles to attack and afford natural lines of resistance for defense. For details of river crossing operations, see FM 31-60.

160. Support of the Crossing

a. The crossing is supported from positions as far forward as secrecy permits. These positions are occupied under cover at dark or during periods of low visibility at the latest possible time prior to the attack. When the defender has the capability of employing nuclear weapons, the attacker must avoid forming large vulnerable targets on either side of the river. Movements from rear assembly areas are continuous through the crossing sites.

b. Direct support artillery may begin to displace to the far bank when the first phase objective have been seized. These units frequently will cross the river in amphibious cargo trucks (DUKW) or on rafts or may cross in personnel carriers. Forward observers and liaison personnel will cross with the assault elements. The use of helicopters to move light artillery across the river will materially reduce congestion at crossing sites. This is of particular importance when the enemy has a nuclear capability. Resupply of ammunition may also be accomplished by helicopter.

c. General support artillery units must be prepared to provide close support for the assaulting troops during the displacement of close support artillery units.

d. The major part of the artillery crosses the river when it is determined that continuous effective support can be delivered from the new positions.

e. Fire support planning must be detailed and coordinated at all echelons. Centralized control of artillery is maintained where possible to provide fire when and where needed. When crossings are made on a front sufficiently broad to preclude centralized control of artillery during the crossing, centralized control is regained

as early as practicable after the crossing. Where necessary, targets for nuclear weapons may be selected to insure crossing the obstacle rather than to inflict maximum initial damage on the enemy. Properly employed, nuclear weapons may eliminate effective small arms fire on the crossing site and may also eliminate effective artillery fire from the crossing site by destroying or neutralizing the enemy artillery or its observation. Thus employment of nuclear weapons will speed up the timing of the operation by merging some phases and eliminating others completely; e.g., phase I, the removal of effective direct small arms fire from the crossing sites, may be merged with phase II, the denial of ground observed artillery fire on the sites. In river crossing operations, consideration should be given to maintaining a reserve of nuclear weapons for employment after the assault crossing against the mobile counter-attacking forces of the defender. The use of air transported troops to lend flexibility and speed to crossing operations requires close and detailed coordination of supporting fires.

f. When nuclear weapons are employed, initial objectives are normally deeper than when only nonnuclear weapons are employed. These objectives, which may include objectives for airborne assault, are selected to isolate the defending forces, destroy them in place with nuclear weapons and offensive maneuver, or force them out of position. Rapid exploitation follows the assault across the river obstacle.

g. Prior to, during, or immediately after the crossing, artillery may be required to—

- (1) Furnish illumination either with searchlight or illuminating shells.
- (2) Smoke enemy observation.
- (3) Screen movement and crossing noises of the attack force by fire.
- (4) Support feints and demonstrations.

161. Artillery Support of A Defense at A River Line

A river obstacle allows the assignment of extremely wide frontages. To effectively organize the defense, the unit is assigned great depth in

which to accomplish its mission, giving it space for considerable movement and dispersion.

a. A river obstacle favors the mobile defense. The defense is organized depending upon the terrain, enemy situation, and forces available. Artillery is employed to cover all probable crossing sites. It is also disposed in depth, capable of massing fires on critical points in the enemy's rear area. Elements of the artillery may be disposed on the far shore in support of security forces. Of particular importance is the necessity for coordination to insure the withdrawal of the artillery with the security forces across the river. Emphasis is placed on fires which assist in canalizing the enemy, stall his attack astride the river, and destroy him by fire and counterattack. When the enemy's main crossing is disclosed, artillery must be prepared

to support the counterattack with the bulk of its fires. Emphasis is placed on maintenance of probable routes of displacement and in preparation of fire plans and supplementary positions to support all counterattack plans.

b. When the number of suitable crossing sites available to the enemy is limited, the nuclear fire plan includes provisions for the disruption of the approaches to the crossing sites on either or both sides of the river depending on the defensive maneuver plan. A target analysis is made of the area within the defensive position for the possible elimination of enemy airheads and bridgeheads by using nuclear fires. Nuclear fires against the enemy on the friendly side of the river are exploited by mobile reserves. Nuclear fires on the enemy side of the river line should be exploited with other artillery fire.

Section IX. SUPPORTING FRIENDLY GUERRILLAS

162. Control

a. In general, friendly guerrilla operations are coordinated or supervised by detachments from the special forces. In such cases, special forces provide liaison to the Army force that is cooperating with the guerrilla force. Hence, artillery requirements will be submitted through normal force-to-artillery channels.

b. As in any operation, it is essential that one artillery headquarters control all the artillery in support of the force. When an organic artillery headquarters, such as a division artillery, is the only headquarters concerned, there is no problem. When this is not the case, however, the force commander must designate an artillery commander for the force.

c. In the majority of operations, the formation of task forces will be the rule for guerrilla operations. When practicable, artillery support is provided the task force, normally by *attachment*. Again, one artillery commander and his headquarters control all the artillery with the task force. The amount and type of artillery required may vary greatly depending on the mission of the force; the terrain; the strength, disposition, and capabilities of opposing forces; and the artillery available.

d. The estimate of artillery requirements is an essential factor in guerrilla operations. The

estimate conforms to the principles in FM 6-20-1 with the following additional considerations:

- (1) The artillery with the force must be as mobile and flexible in every respect as the supported force.
- (2) In general, the artillery unit(s) must be self-sustaining for the period anticipated for the operation. Frequently, this will entail providing additional equipment and personnel for limited periods.
- (3) The estimate of ammunition requirements will often be a compromise between sufficient stocks to support all phases of the operation and limited vehicular or air resupply capability.
- (4) Dependent on the consideration in c above, the security of the artillery units must be insured. This may require attaching guerrilla units or force infantry, armored, or mechanized units to artillery or positioning artillery so that supported forces provide adequate security.
- (5) The requirement to deliver massed nonnuclear fires may frequently be of secondary importance. The ability to

deliver a few timely rounds may outweigh other considerations.

163. Type of Operations

a. Missions assigned to guerrilla forces or to supporting units will vary greatly even within a theater.

b. In general, the missions of the forces requiring artillery support include—

- (1) Interdiction operations such as cutting lines of communication.
- (2) Destruction of critical targets.
- (3) Screening operations.
- (4) Raids.
- (5) Seizure of critical objective areas.
- (6) Protection of flanks and gaps.
- (7) Linkup operations of all types.

c. Guerrilla operations are generally fluid in nature. This demands the utmost in flexibility in the employment of artillery units. Offensive and defensive operations may frequently merge within a single action. For example, artillery in

support of a raid is engaged in an offensive operation; however, certain phases or changes in the situation may demand the rapid delivery of defensive fires.

164. Organization for Combat

a. Tactical missions established in FM 6-20-1 apply subject to frequent modification.

b. Large groupings of artillery are rarely required for guerrilla operations. The general rule will be the attachment of small artillery units or parts thereof; this artillery unit may be as small as a section.

c. Composite units are a frequent requirement. Mixed calibers within units, even of battery size, serve to fulfill many of the needs of the supported force in operations such as those listed in paragraph 163. When such an artillery unit is established, care is taken that each element is provided with sufficient operational and logistical support to sustain itself for the operation.

Section X. SUPPORTING ANTIGUERRILLA OPERATIONS

165. Major Considerations

a. Aside from his mission, the primary concern of an artillery commander is the security of his command, both on the march and in position. The artillery commander must, however, keep in mind that he is fighting an unconventional enemy and that in most cases, conventional tactics cannot be applied because of the terrain and situation. It is important at this time for the artillery commander to search for unconventional means to employ his unit, either wholly or in part, to give the antiguerrilla force the maximum fire support under the existing situation.

b. Since guerrilla forces do not operate in a conventional manner and are elusive in their operations, most artillery targets are fleeting and temporary. This situation eliminates the need for massed fires and instead, requires rapid precision fire.

c. As in friendly guerrilla operations, antiguerrilla operations are characterized by decentralization of control and the employment of small units.

d. Airmobile operations, when feasible, are frequently undertaken. Artillery support may be limited to a section or a platoon and will seldom require units of more than battery size.

166. Character of Operations

a. Operations launched to destroy guerrilla forces seek to destroy not only the guerrilla units themselves but also their sources of supply and communications. Hence, the requirements for artillery support is generally limited in the earlier phases of an operation.

b. Care must be taken to insure security of movement and occupation at the latest time possible to maintain the secrecy desired as to the intentions of the supported unit.

c. As offensive operations progress, missions of supported forces are directed toward isolation, encirclement, and destruction of guerrilla units. Artillery support is most valuable during this phase.

d. Once a guerrilla force has been encircled, the primary concern of the force commander is to split up the guerrilla force and at the same

time to repel the counterattacks of the encircled guerrillas.

e. In the former case, that of splitting or breaking up of encircled forces, target acquisition is an obvious requirement. The movements and sectors of responsibility of ground observers must be carefully coordinated with air coverage. Artillery observers with patrols and outposts are of great value. When target acquisition agencies are limited in number or effectiveness, fire planning, particularly with emphasis upon suspect targets, becomes important. Concentrations and barrages are laid down with a view toward dividing guerrilla forces and destroying or neutralizing small elements.

f. The attachment of artillery observer sections to all forces which will be in contact with the enemy cannot be overemphasized. The fluidity of operations and rapid changes in the tactical situation demand that artillery commanders be constantly ready to support any part of the operation. Usually, their primary reliance will be on observers with patrols, outposts, and maneuver elements—normally of small units such as squads and platoons.

g. The encirclement of a major guerrilla force is, whenever practicable, a planned operation. It calls for fire support plans and fire plans in keeping with force plans. Frequently, artillery may be the primary source of fire support and only coordination with supported force weapons such as mortars, assault guns, and antitank weapons, is required. However, when air, naval fire, chemical, or other means of fire support are available, fire support coordination becomes an essential requirement. In an operation such as this, fire support coordination is best accomplished at company level and below through the provision of artillery liaison officers with sections reinforced as required.

h. The force commander normally retains a reserve for counterattacking guerrilla breakout forces. The reserve is committed to restore the perimeter of the encirclement or take decisive action at an appropriate time. Artillery support is planned for all possible reserve force operations and liaison is constantly maintained.

i. Artillery is invaluable in the pursuit of escaping guerrilla elements. The demoralizing effect of artillery fires on a defeated guerrilla force must not be overlooked. Often, a few rounds will serve to turn retreat or "last-ditch" defense into surrender.

167. Other Considerations

a. Although light artillery is most generally adaptable to antiguerrilla operations, medium and heavy caliber weapons are frequently used.

b. The greater the degree of planning for an operation, the greater the possibility of employing heavier artillery units. This fundamental is subject to modification by other factors; for example, weather and terrain may exclude such employment. But, whenever the opportunity is presented, medium and heavy artillery are considered for employment. For example, heavy self-propelled artillery used against guerrilla forces in caves or prepared shelters can well determine the outcome of a phase of an operation.

c. Higher artillery staffs, when making artillery estimates or formulating fire support plans, should be prepared to provide support for all types of forces; e.g., foot and mechanized infantry, armor, and airmobile. They must be ready with an organization for combat (and require that units are alerted and prepared accordingly) to accompany and support small, highly mobile combined arms teams of all types—from division down to the reinforced company or platoon.

Section XI. AIRMOBILE ARTILLERY MOVEMENTS

168. General

a. Artillery movements utilizing helicopters as the primary means of mobility are conducted as tactical moves and may be executed under night and day conditions. The airmobile artillery move is applicable in all phases of artillery

operations and is utilized to rapidly launch artillery units into battle in support of airlanded assaults, to overcome enemy and natural obstacles in occupation of position, to facilitate rapid displacement of the artillery firing unit over terrain inaccessible to wheeled and tracked

vehicles, and to bypass enemy troop concentrations.

b. The airmobile artillery movement is characterized by detailed planning and coordination, aggressive execution, speed of displacement, and operation with minimum personnel and equipment for periods of short duration.

c. The airmobile artillery movement is conducted in four phases—planning, marshalling, movement, and occupation of position. The planning phase encompasses coordination with supported and supporting units, reconnaissance and selection of positions, preparation and issuance of forms and orders, and, time permitting, rehearsals. The marshalling phase consists of ground movement to appropriate areas; preparation of the helicopter loading area; preparation of troops, equipment, and supplies for airmobile operations; and loading of helicopters preparatory to actual movement. The movement phase is the actual move from the loading area to the landing site; this phase commences with takeoff of the first helicopter and ceases with arrival of the last helicopter load at the landing site. The occupation phase of the airmobile movement consists of the unloading of personnel and equipment, organization of the helicopter landing site, and occupation of position.

169. Organization for Movement

a. Organization of the artillery unit for the airmobile movement is an integral part of the planning phase.

b. Limitations imposed by numerical availability and lift capabilities of cargo-type helicopters dictate that the light artillery unit operate in two echelons during airmobile operations. These echelons are designated as the assault echelon (air) and the rear echelon (surface).

- (1) Composition of the assault echelon will vary with assigned mission, aircraft available, and duration of the operation. Generally, the assault echelon will consist of the essential elements of the battery headquarters, communication section, and the firing battery. Because of the lack of ground mobility and survey capability of the artillery battery, survey control must

be coordinated with the supported unit.

- (2) The rear echelon will include all personnel and equipment not included in the assault echelon.
- (3) Resupply of the assault echelon will be accomplished by normal vehicular means if the terrain and tactical situation permit, since airmobile operations may be restricted or curtailed by periods of inclement weather. The rear echelon is charged with the responsibility for transporting all classes of supply to the assault echelon by ground transportation or by airmobile operations until actual link-up is effected.

c. The success or failure of a given operation may depend on the composition of both the assault and rear echelons of the airmobile artillery unit. Therefore, due importance should be attached to the selection of troops and equipment of both echelons, and responsibilities should be assigned to the most essential personnel consistent with requirements imposed by the assigned missions.

170. Planning

a. A successful airmobile artillery movement is based on planning. The planning phase of the movement will vary in time and detail, depending on the urgency of the situation, and will be materially enhanced by the development of standing operating procedures. The planning phase of the movement begins immediately upon receipt of the warning order and continues through commencement of the airmobile movement phase. Major considerations involved in planning movement are command and coordination; organization of the unit consistent with the mission; reconnaissance and selection of ground and air routes, loading areas and landing sites, and position area(s); preparation of marshalling and helicopter loading and movement plans based on organization of the unit; rehearsals of helicopter loading and unloading; resupply requirements; and preparation and issuance of the unit operational instructions.

b. Coordination relative to the airmobile artillery movement should be conducted on a con-

tinuing and aggressive basis throughout all phases of the movement. Normally, an airmobile liaison team will be provided to the artillery unit to assist in the technical aspects of planning and executing an airmobile movement and to supervise rehearsals, preparation and distribution of equipment in the loading area(s), loading and unloading, and signaling relative to the airmobile movement. Continuous liaison must be maintained between the artillery battery and the airmobile liaison team in all phases of the movement.

Section XII. AIRBORNE OPERATIONS

171. General

a. Airborne operations consist of the movement into an objective area of combat forces with their logistical support forces for the execution of tactical as well as strategic missions. These forces may consist of airborne divisions, infantry divisions, air transportable army missile commands and other air transportable units. Airborne operations may be joint, using Air Force and/or U.S. Navy aircraft, or unilateral using Army transport aircraft.

b. Light and medium artillery normally accompanies the assault echelon of an airborne assault or the initial echelon of an air-landed operation. The division artillery of the airborne division is trained and capable of entering combat entirely by parachute assault with the exception of the materiel of the airborne division missile unit which is air transportable in heavy transport aircraft. The airborne division light artillery and the infantry division light and medium artillery is air transportable in medium transport aircraft and medium assault aircraft. Light and medium nondivisional field artillery has the same air transportability as infantry divisional units equipped with similar materiel. Heavy cannon artillery and short range missile artillery are air transportable in heavy transport aircraft. Very heavy cannon artillery and medium range missile artillery are not air transportable without extensive disassembly. Light and aeropack artillery are helicopter transportable as slung loads (disassembly may or may not be required) on light transport helicopters and as internal loads in medium transport helicopters. Artillery may support airborne operations from outside the objective area by providing long-range nuclear or nonnuclear fires.

c. Factors to be considered in planning for

artillery employment in an airborne operation are—

- (1) Mass preassault nuclear and/or non-nuclear bombardment of enemy forces and installations in the objective area.
- (2) Other preassault nuclear and/or non-nuclear fires.
- (3) Capability of artillery to rig material for heavy drop parachute delivery; transport in aircraft or by helicopter.
- (4) Refresher training in air transportation techniques.
- (5) Application of rigid security to deny the enemy knowledge of the planned operation and to preclude his use of nuclear fires against the departure area prior to the operation being launched.
- (6) The possibility of creating obstacles or excessive contamination in the objective area when nuclear fires are to be employed in the area prior to landing.
- (7) The impracticability of conducting ground reconnaissance of position areas in the assault objective area, and determination of accurate declination constants, survey datum, and target intelligence from outside agencies.
- (8) Essential communication between the airhead artillery headquarters and the artillery headquarters of linkup or supporting forces.
- (9) Early establishment of centralized control of artillery for the assault phase.
- (10) The need for a fire coordination line between airborne assault and linkup forces to prevent fires or the effects of fires of one force from interfering with the operation of the other force.

172. Plans and Estimates

Preliminary plans and estimates for airborne operations normally originate at theater level with the tentative selection of missions for the airborne units. Joint airborne force develops or assigns to subordinate airborne task forces for development, detailed operational plans for specific units. With announcement of the complete planning directive, concurrent and continued planning is undertaken at all echelons of the affected units. Techniques and procedures for airborne planning are contained in FM 57-10. It should be emphasized that commanders and staffs at each level of command are included in the planning sessions of the next higher headquarters. Similarly, it is desirable that artillery representatives be included as members of the supported unit's planning groups. This practice expedites concurrent planning at all echelons through personal coordination between successive headquarters. During the early phases, plans must be developed from estimates that may be based on assumptions and fragmentary information. All plans, however, are subject to change as more complete and reliable information becomes available to the subordinate units.

173. Training

a. An analysis of the airborne force mission and the elements of intelligence concerning the drop area and objective will indicate the type of training that must be stressed. Special attention will be devoted to training in loading aircraft (TM 57-210). The types of aircraft that are to be allocated to each unit should be determined as early as possible. In the event the units are unfamiliar with the types of aircraft included in the allocation, additional training in loading will be necessary to insure efficient operation. Training will include complete rehearsals and practice landing areas should be selected which resemble the terrain of the actual landing areas as closely as possible.

b. Although it is desirable to drop or air land the artillery in areas already secured by the infantry, changing situations may force artillery units to defend themselves in the drop

or landing zone or to fight their way to designated assembly or position areas. These probabilities require that artillery units be trained in infantry tactics, to include fire and maneuver and use of individual weapons. In addition, the artillery must be trained for the following eventualities:

- (1) Decentralized control.
- (2) Movement of pieces by hand.
- (3) Communication by radio only.
- (4) Defense of own position.
- (5) Abnormally large sectors of fire.
- (6) Enemy employment of nuclear weapons against the airhead.

174. Intelligence

Information and intelligence concerning the landing area and objective will be obtained from higher headquarters and from agencies not under the control of the artillery. The artillery's principal means of supplementing target information is through interpretation of aerial photographs. Therefore, it is mandatory that complete aerial photographic coverage of the area of operations be available to the artillery commander. In most cases, photographic interpretation will be the only means of reconnaissance, selection of positions and routes to assembly areas, and identification and evaluation of targets.

175. Communication

Radio is the principal means of ground and air-ground communication. Visual signals and prearranged codes can supplement radio and will furnish quick and reliable communication, particularly between air and ground elements. Short wire lines, laid quickly by hand, will facilitate fire direction. Wire laying by light aircraft for longer distances may be used when feasible. The communication plan must provide for expansion from decentralized to centralized control and for communication with other supporting arms and services. The correct use of appropriate signal operations instructions (SOI) will reduce or eliminate much of the communication difficulties and confusion characteristic of early action in the area of operations.

176. Security

Surprise is a requisite for successful airborne operations. The amount of information that can be divulged to the troops and the time of its release are regulated at all echelons and com-

mand. Usually, only a few key personnel are briefed prior to being sealed in the marshalling areas. However, every man is briefed concerning his role in the operation as soon as security permits.

APPENDIX I

REFERENCES

FM 1-100	Army Aviation.	FM 31-60	River Crossing Operations.
FM 6-20-1	Field Artillery Tactics.	FM 31-71	Northern Operations.
FM 6-40	Field Artillery Cannon Gunnery.	FM 31-72	Mountain Operations.
FM 6-61	Field Artillery Missile Battalion, Honest John Rocket, Self-Propelled.	FM 57-10	Joint Airborne Operations.
FM 6-140	The Field Artillery Battery.	FM 100-5	Field Service Regulations, Operations.
FM 11-16	Signal Orders, Records, and Reports.	FM 101-5	Staff Officers' Field Manual: Staff Organization and Procedure.
FM 25-10	Motor Transportation, Operations.	FM 101-10	Staff Officers' Field Manual: Organization, Technical and Logistical Data. Part 1, Unclassified.
FM 31-12	Army Forces in Amphibious Operations (The Army Landing Force).	FM 101-31	Staff Officers' Field Manual: Nuclear Weapons Employment (U).
FM 31-21	Guerrilla Warfare and Special Forces Operations.	TM 9-1907	Ballistic Data, Performance of Ammunition.
FM 31-25	Desert Operations.	TM 57-210	Air Movement of Troops and Equipment.
FM 31-30	Jungle Operations.		
FM 31-50	Combat in Fortified Areas and Towns.		



APPENDIX II

THE FIRE SUPPORT PLAN

1. General

a. The fire support plan is an annex to an operation order (OPORD) or operation plan (OPLAN). For details on operation orders and operation plans see FM 101-5.

b. The fire support plan is prepared in conjunction with the plan of operation of the ma-

neuver and follows basically the five-paragraph field order.

c. Figure 16 shows the method used in preparing a fire support plan.

2. Division Artillery Fire Support Plan

A division artillery fire support plan is shown below.

Figure 16. Fire support plan.
(Located in back of manual)

(Classification)

Copy Nr _____
1st Mech Div
MOHRA (8835), GERMANY
221500 May 19____
GX 826

ANNEX C (FIRE SUPPORT PLAN) TO OPLAN 21.

Reference: Map, GERMANY, 1:50,000, sheets 278, 279, 308, 309, 338, and 339.

1. SITUATION

a. Enemy forces.

- (1) Enemy has capability of employing unknown numbers of nuclear weapons of 2- to 200-KT yields.
- (2) There are 200 fighter, 100 ground-attack, and 100 bomber aircraft within operational radius of our zone.
- (3) Periodic intelligence report and ISUM.

b. Friendly forces.

- (1) 1st Corps atk 230230 May to envelop the enemy and trap him south of the WESER-WERRA River; 4th Armd Div pass through the 2d Mech Div to seize high ground vic USLAR (4424) and HEDEMUNDEN (5493); 2d Mech Div in center seize SONDERSHAUSEN (3093); 3d Mech Div on east (right) seize ERFURT (4050); Prep to cont atk to the north.
- (2) Elements of 9th TAF support 1st Army; priority to 1st Corps.
- (3) 101st Arty Group:
2d How Bn (155-mm) (SP), 50th Arty

(Classification)

(Classification)

2d How Bn (155-mm) (Towed), 51st Arty
 1st How Bn (8-in) (SP), 70th Arty
 1st Msl Bn (Honest John) (SP), 82d Arty
 2d Msl Bn (Lacrosse), 86th Arty
 GS Reinf 1st Mech Div Arty.

c. Attachments.

- (1) 1st How Bn (155-mm) (SP), 50th Arty, atch eff 221600 May _____.
- (2) 1st How Bn (155-mm) (Towed), 51st Arty atch eff 221600 May _____.
- (3) 1st AW Bn (40-mm) (SP), 48th Arty, atch eff 221600 May _____.

2. MISSION

Div atk 230230 May; seize high ground north-east of EISENACH (7348); cont atk NW on corps order to seize high ground north of ESCHWEGE (7471); contain en forces south and west of the WERRA River.

3. EXECUTION

a. Concept of operation.

- (1) General. This operation will be a penetration of en positions employing firepower and maneuver forces, followed by a rapid exploitation. This is a two-phase operation. Speed and surprise are vital to both phases.

(2) Maneuver.

- (a) Phase 1 H to H+6 hours. Div penetrates enemy defenses following a preparation beginning with nuclear fires with 1st Bde on the west (left) and 2d Bde on the east (right). 1st Bde makes the main atk in the direction of Hills 455-494-456.
- (b) Phase 2. Div Cont atk to NW to seize high ground north of WERRA River with 1st Bde on the south (left) and 2d Bde on the north (right). 1st Bde makes the main atk in the direction of Hills 516-569. 3d Bde assists in seizure of final obj.

(3) Fire support.

- (a) In addition to normal zone of operations, 1st Mech Div plans fires east of gridline 83 and west of WERRA River in zone of 2d Corps.
- (b) Phase 1. At H—26 minutes, six nuclear weapons will be employed to neutralize enemy forward positions and local reserves in the div zone. Remainder of allocated nuclear weapons will be reserved for employment against on-call targets and targets of opportunity. Every effort will be made to achieve the desired results with a high assurance of no significant fallout contamination. (A very high assurance of no contact, fireball to ground, is required.) The nonnuclear portion of the preparation will begin immediately following the nuclear attack and will include artillery fire, air fires, and chemical fires. Priority of fire spt to 1st Bde.
- (c) Phase 2. A preparation (nonnuclear fires) will be planned to spt phase 2. Preparation will be fired *on order* at any time after H+4 hours. The nuclear weapons remaining after phase 1 may be employed against on-call targets of opportunity. Priority of all fire spt to 1st Bde until 3d Bde is committed. Then priority of air and other fire spt means, as they become available to 3d Bde.

(Classification)

(Classification)

b. Air support.

- (1) General. Air sorties available to 1st Corps are limited. Available sorties will be employed to supplement other fires. Target priority will be maintained for employment of air alert flights as cleared by the corps fire support coordinator. Target director posts SCARECROW and PACKRAT available for night and bad weather bombing. All air attacks short of bomb line controlled by FAC and/or TDP.
- (2) Allocation.
 - (a) Air support effort available to 1st Corps—75 sorties. TAF provides air alert aircraft for helicopter-borne operation on request.
 - (b) Thirty-two tac ftr sorties allocated to 1st Inf Div (separate from corps allocation in (a) above) for period 230230 May to 230330 May. Priority of employment zone of main attack.
 - (c) Air Force personnel allocated to 1st Inf Div are further allocated as indicated.
 1. ALO—1 to DTOC.
 2. FAC—7.
 - (a) Two to each bde.
 - (b) One to div arty. (Airborne on request.)
 3. One air coordinator, THUNDER 12, available through DTOC.
- (3) Miscellaneous. Appendix 1, Air Fire Plan, to Annex C, Fire Support Plan.

c. Artillery support.

- (1) General. Arty spt phase 1 of the atk with a preparation beginning with nuclear fires at H—26 min; nonnuclear fires beginning at H—20 will cont (as scheduled) to approx H+10 min. A preparation will be planned for phase 2.
- (2) Organization for combat.
 - (a) Field arty:
 1. 1st How Bn (SP), 22d Arty: DS 1st Bde.
 2. 1st How Bn (SP), 24th Arty: GS: reinf 1st How Bn (SP), 22d Arty; DS 3d Bde on order.
 3. 1st How Bn (SP), 26th Arty: DS 2d Bde.
 4. 1st Msl Bn (SP) (HJ), 20th Arty: GS.
 5. 1st How Bn, 28th Arty (155-mm 8-inch): GS.
 6. 1st How Bn (SP), 50th Arty: Reinf 1st How Bn, 22d Arty.
 7. 1st How Bn (Towed), 51st Arty: GS reinf, 1st How Bn, 24th Arty; prep for GS, on order.
 - (b) Air def arty: 1st AW Bn, 48th arty, protect in priority nuclear firing units, division arty, division CP.
- (3) Miscellaneous.
 - (a) Arty prep to mark air targets. First rd, red smoke; second rd, green smoke, on order.
 - (b) Restrictions on arty fires during helicopterborne operations to be announced.
 - (c) Priority of position areas:
 1. Nuclear firing units.
 2. Direct support units.
 3. Others.
 - (d) Appendix 2, Artillery Fire Plan.

d. Chemical support. See Artillery Fire Plan.

(Classification)

(Classification)

e. Nuclear support.

(1) General.

- (a) 100 nuclear weapons are available to 1st Corps. Yields range from 1- to 20-KT. Corps retains 40 weapons for employment.
- (b) Atk means available within corps are artillery cannon and missile. Tac air spt is available on request.

(2) Allocation nuclear weapons:

(a) Yields:

- 3/Short range cannon/Bravo (1 KT)
- 2/Medium range cannon/Charlie (2 KT)
- 3/Long range cannon/Delta (5 KT)
- 1/Longe range cannon/Echo (10 KT)
- 1/Free rocket, large/Foxtrot (20 KT)

(b) Planned employment: (Phase 1)

Scheduled

- 2/Short range cannon/Bravo (1 KT)
- 2/Medium range cannon/Charlie (2 KT)
- 2/Long range cannon/Delta (5 KT)

6

Available for on-call and targets of opportunity and retained for phase 2—on-call targets.

- 1/Short range cannon/Bravo (1 KT)
- 1/Long range cannon/Delta (5 KT)
- 1/Long range cannon/Echo (10 KT)
- 1/Free rocket, large/Foxtrot (20 KT)

4

(3) Miscellaneous.

- (a) Very high assurance of no significant fallout contamination is required.
- (b) Friendly troops—negligible risk.
 - 1. Scheduled fires Phase 1—Warned and protected.
Phase 2—Warned and exposed.
 - 2. On-call fires Warned and exposed.
 - 3. Other fires Unwarned and exposed.
- (c) No damage to MUHLHAUSEN (0274) is to result from nuclear fires.

f. Coordinating instructions.

(1) Fire planning and control.

- (a) DS Arty Bn fire plans to div arty 222000 May.
- (b) Preplanned air missions to TASE/DTOC 221700 May.
- (c) Changes to nuclear fire plan to TASE/DTOC NLT 230100 May.
- (d) Cancel scheduled fires (nuclear and air) NLT 230130 May.
- (e) Emergency cancellation of fires in clear text.
- (f) Chemical fire requests to TASE/DTOC 221700 May.

(2) Safety.

(a) Air.

- 1. Units post air watch; no firing of VT fuze when friendly aircraft are endangered.
- 2. Frontline marked on request with orange panels.
- 3. Emergency signal to lift airstrike—green star parachute, followed by yellow smoke.

(Classification)

(Classification)

4. Code word to lift airstrike—"SEA GULL."

5. Appendix 1, Air Fire Plan.

(b) Nuclear.

1. Firing units report completion of mission on command nets, in firing sequence (FLASH). Use Code word "BLACK APPLE" to indicate completion of all scheduled fires for phase 1 and "BLACK BEAUTY," for phase 2.

2. During period 230200 May to 230220 May :

(a) No friendly troops forward of present line of contact without specific authority from battle group or higher headquarters.

(b) Friendly troops forward of nuclear safety line 1 (NSL 1) will have foxholes or equivalent protection.

3. Minimum safe distance for on-call targets. See artillery fire plan.

4. Desired ground zero (DGZ) and minimum safe distance (MSD) for targets of opportunity to be announced.

5. All personnel not in lightproof shelters will wear protective goggles or cover eyes with opaque material from 230200 May to 230330 May.

6. Commanders insure compliance with safety requirements. Info of nuclear attack will not be disseminated lower than commanders of company-size units prior to 230100 May.

7. Notification of impending nuclear atk on on-call targets or targets of opportunity Per Div SOP.

(3) One hour notification required to change scheduled bomb line.

4. ADMINISTRATION AND LOGISTICS

a. ADMINO 9.

b. Available supply rate: 23-25 May.

Nonnuclear: 105-mm how—145

155-mm how—110

8-in how—80

c. Special ammunition load.

(1) 1st Msl Bn (SP) (HJ), 20th Arty:

(a) Nuclear: 2 free rocket/FOXTROT (20 KT) (one corps weapon)

(b) Nonnuclear: 4 HE, 2 chem

(2) 1st How Bn, 28th Arty:

1 short range cannon/BRAVO (1 KT)

2 med range cannon/CHARLIE (2 KT)

(3) 1st How Bn, 50th Arty:

2 short range cannon/BRAVO (1 KT)

(4) SASP: vic HOLDSCHHEIM (8261) ; DAO up at SASP.

(5) Special ammunition load to be drawn during hours of darkness prior to 222300 May.

(Classification)

(Classification)

5. COMMAND AND SIGNAL

ANNEX D, SIGNAL, TO OPLAN 21. INDEX 3, SOI.

Maintain normal communications prior to H—26 minutes. Acknowledge.

SHEPARD
Maj Gen

Appendixes: 1—Air Fire Plan
2—Arty Fire Plan

Distribution: A
2d Corps (2 copies)
2d Mech Div (2 copies)
4th Armd Div (2 copies)
101st Arty Gp

OFFICIAL:

/s/ Wood
WOOD
G3

(Classification)

(Classification)

3. Corps Artillery Fire Support Plan

A corps artillery fire support plan is shown below.

Copy Nr 5
1st US Corps
MEININGEN (PS0507), GERMANY
221130 May 19__
CEG 41

ANNEX D (FIRE SUPPORT PLAN) TO OPORD 16.

Reference: Map, GERMANY, 1:100,000, sheets Q4, Q5, R4, and R5.

1. SITUATION

a. Enemy forces. Annex A, Intelligence.

b. Friendly forces.

- (1) 1st US Army cont atk 23 May to trap and destroy enemy between the FULDA (NB3866) and WESER-WERRA (NC0244) Rivers and prepares to cont atk to the north.
- (2) 2d Corps atk 23 May to seize crossings over FULDA (NB4653)—ULFER (NC5944) Rivers and destroy enemy in zone.
- (3) 3d Corps atk 23 May to seize SANGERHAUSEN (PB6004) and cont atk to the north.
- (4) 9th TAF supports 1st US Army.

c. Attachments and detachments. May troop list.

2. MISSION

Corps atk 230230 May to envelop the enemy and trap him south of the WESER-WERRA River, link up with BAOR west of USLAR (NC4424), and prep to cont atk to the north.

3. EXECUTION

a. Concept of operation. OPORD 16.

b. Air support.

(1) General.

- (a) Current air operations to continue until H-hour.
- (b) Priority of available air support to 2d Mech Div in phase 1, and then to 4th Arm Div when committed in phase 2.

(2) Allocations.

- (a) Air support available to 1st Army, 264 sorties, 1st Corps has priority; TAF provides air alert aircraft for helicopterborne operations on request.
- (b) Allocation of FAC.
 - 1st Mech Div 7
 - 2d Mech Div 7
 - 3d Mech Div 7
 - 4th Arm Div 9
- (c) One airborne coordinator allocated to 1st Corps, THUNDER 12, available through TOC.

(3) Miscellaneous. Appendix 1, Air Fire Plan to Annex C, Fire Support Plan.

(Classification)

(Classification)

c. Artillery support.

(1) General. Arty spt phase 1 of the atk with a preparation beginning with nuclear fires at H—26 min; nonnuclear fires beginning at H—20 will continue as scheduled to approximately H+10 min. A preparation will be planned for phase 2.

(2) Organization for combat.

(a) Field artillery.

1. 101st Arty Gp.

2d How Bn (155-mm) (SP), 50th Arty

2d How Bn (155-mm) 51st Arty

1st How Bn (8-in) (SP), 70th Arty

1st Msl Bn (HJ) (SP), 82d Arty

2d Msl Bn (LX), 86th Arty

GS-reinf 1st Mech Div Arty.

2. 102d Arty Gp.

3d How Bn (155-mm), 51st Arty

1st Gun Bn (175-mm) (SP), 60th Arty

3d How Bn (8-in), 71st Arty

1st How Bn (8-in), 71st Arty

Reinf 2d Mech Div Arty.

3. 103d Arty Gp.

4th How Bn (155-mm) (SP), 50th Arty

2d Gun Bn (175-mm) (SP), 62d Arty

2d How Bn (8-in), 71st Arty

3d How Bn (8-in), 71st Arty

GS-reinf 3d Mech Div Arty.

4. 104th Arty Gp.

5th How Bn (155-mm) (SP), 50th Arty

2d How Bn (8-in) (SP), 70th Arty

4th How Bn (8-in) (SP), 70th Arty

GS.

5. Btry A (Slt), 37th Arty: GS.

6. 1st Tgt Acq Bn, 39th Arty: GS.

7. 1st How Bn (105-mm) (SP), 40th Arty: Atch 4th Armd Div.

8. 1st How Bn (155-mm) (SP), 50th Arty: Atch 1st Mech Div.

9. 3d How Bn (155-mm) (SP), 50 Arty: Atch 2d Mech Div.

10. 1st How Bn (155-mm), 51st Arty: Atch 1st Mech Div.

11. 4th How Bn (155-mm), 51st Arty: Atch 3d Mech Div.

12. 1st Msl Bn (C), 91st Arty: GS.

(b) Air Defense Artillery.

1. 1st AW Bn, 48th Arty: Atch 1st Mech Div.

2. 2d AW Bn, 48th Arty: Atch 3d Mech Div.

3. 3d AW Bn, 48th Arty: Atch 2d Mech Div.

4. 4th AW Bn, 48th Arty: Atch 4th Armd Div.

(Classification)

(Classification)

- (3) Miscellaneous.
 - (a) Arty prep to mark tgts, on order.
 - (b) Restrictions on arty fires during helicopterborne operations to be announced.
 - (c) Priority of positions areas: Nuclear firing units.
 - (d) Appendix 2, Artillery Fire Plan.
- d. Chemical support. See artillery fire plan.
- e. Nuclear support.
 - (1) General.
 - (a) 100 nuclear weapons to 1st Corps. Yields from 1- to 20-KT.
 - (b) Atk means available within corps are arty cannon and missile. Tac air available on request.
 - (2) Allocation.
 - (a) 1st Mech Div.
 - 3/Short range cannon/Bravo (1 KT)
 - 2/medium range cannon/Charlie (2 KT)
 - 3/Long range cannon/Delta (5 KT)
 - 1/Long range cannon/Echo (10 KT)
 - 1/Free rocket, large/Foxtrot (20 KT)
 - (b) 2d Mech Div.
 - 5/Short range cannon/Bravo (1 KT)
 - 4/Medium range cannon/Charlie (2 KT)
 - 6/Long range cannon/Delta (5 KT)
 - 2/Long range cannon/Echo (10 KT)
 - 3/Free rocket, large/Foxtrot (20 KT)
 - (c) 3d Mech Div.
 - 3/Short range cannon/Bravo (1 KT)
 - 2/Medium range cannon/Charlie (2 KT)
 - 2/Long range cannon/Delta (5 KT)
 - 2/Long range cannon/Echo (10 KT)
 - 1/Free rocket, large/Foxtrot (20 KT)
 - (d) 4th Armd Div (phase II).
 - 5/Short range cannon/Bravo (1 KT)
 - 6/Medium range cannon/Charlie (2 KT)
 - 4/Long range cannon/Delta (5 KT)
 - 3/Long range cannon/Echo (10 KT)
 - 2/Free rocket, large/Foxtrot (20 KT)
 - (e) 1st Corps.
 - 4/Short range cannon/Bravo (1 KT)
 - 6/Medium range cannon/Charlie (2 KT)
 - 10/Long range cannon/Delta (5 KT)
 - 10/Long range cannon/Echo (10 KT)
 - 10/Free rocket, large/Foxtrot (20 KT)

(Classification)

(Classification)

f. Coordinating instructions.

(1) Troop safety.

(a) Nuclear safety line, as indicated, troops to be warned and protected.

(b) Warning Per Corps SOP no later than H—50 min.

(2) Report of damage assessment to TOC on completion of study.

(3) Air and arty fire plans to corps FSE by 222400 May.

4. ADMINISTRATION AND LOGISTICS

a. ADMINO 2.

b. Available Supply Rate 22-25 May.

105-mm how—160

155-mm how—130

175-mm gun—80

8-in. how—100

c. Special ammunition load, SASP locations and resupply instructions: App 4, Special Ammunition Logistics.

5. COMMAND AND SIGNAL

a. Signal.

(1) SOI, Index 1-7, eff 220001 May 19__.

(2) Joint SOI, Index 22-3a, eff 220001 May 19__.

b. Command.

(1) Corps FSE, corps CP.

(2) Div report casualties.

Acknowledge.

STEVENS
Lt Gen

Appendixes: 1—Air Fire Plan.

2—Artillery Fire Plan.

3—Air Defense (omitted).

4—Special ammunition logistics
(omitted)

Distribution: A

2d Corps

3d Corps

BAOR

OFFICIAL:

/s/ Roth

ROTH

G3

(Classification)

APPENDIX III

FIRE SUPPORT PLAN APPENDIXES

1. Air Fire Plan Appendix

The air fire plan appendix is normally prepared by the G3 air in the TASE, under the supervision of the fire support coordinator or his designated representative. The appendix is not an order to the supporting air, but it provides information to the force. An air fire plan appendix is shown in figure 17.

2. Artillery Fire Plan Appendix

a. The artillery fire plan is an appendix to the fire support plan which is an annex to the operation order. The artillery fire plan will usually contain five parts: The graphical portion, the target list, the schedule of fires, marginal information, and tables of groups of fires when appropriate.

- (1) The graphical portion (fig. 18) depicts all concentrations of interest. Each concentration is designated by tick marks except that any target larger than 100 meters must be outlined in size and shape. Also appearing in the graphical portion are boundaries between maneuver elements, objectives, and friendly forces forward dispositions.
- (2) The target list contains sufficient information to adequately describe the target, locate the target, and indicate special methods of attack and munitions to be used. Specific requests as to time of firing, etc., are included under remarks (fig. 19).
- (3) Schedule of fires (fig. 20). When completed, assigns a specific unit to fire on a specific target with a designated amount of ammunition at a definite

time. Space is allowed in the schedule to permit pieces to shift and tubes to cool before attacking the next target in the schedule. Schedules of fire are prepared concurrently at all artillery levels and targets are added as developed, so long as space is available in the schedule within the time length of the preparation.

- (4) Marginal information contains instructions concerning width of sheaf, smoke missions, chemical munitions to be used, destruction missions, and such other instructions necessary for the execution of the fire plan (fig. 18).
- (5) When appropriate, tables of groups of fires on call (fig. 21) may appear on the artillery fire plan. Groups of fires to attack a tactical location too large for a single concentration should be assigned to specific units to be fired when called.

b. All portions of the artillery fire plan may appear on the same document (overlay), or they may be reproduced separately. Reproduction facilities available often are not sufficiently large to make the plan into a single document.

c. The artillery fire plan must be prepared and distributed to firing units in sufficient time to allow firing data and computations to be completed and ammunition to be prepared to begin firing at the time specified in the schedule of fires. The plan will often be issued in fragments and orally to meet this time requirement. Continuous fire planning will require that changes be made by the quickest means available. Assigned targets are sent to designated units to fire when entered in the schedule to allow as much time as possible for data preparation.

Classification

Copy Nr 13
1st Inf Div
PACIFIC CITY (1935), BAHA
132000 Sep 19__
ML 18

77
86

3
1
AF 221
O/C

Appendix 1 (Air Fire Plan) to Annex C
(Fire Support Plan) to OPORD 18
Map: BAHA, 1:50,000, CAPE FORTH-ATHENAL

1. SITUATION

- Enemy forces. Annex B (Intell) to OPORD 18.
- Friendly forces. Elements 9th Tactical Air Force furnish offensive air support to 1st Army with priority to 1st Corps.
- Assumption. For planning purposes, 200 tactical fighters available daily to support 1st Army.

2. MISSION

1st Army will coordinate the offensive air effort.

3. EXECUTION

- Concept of Air Fire Support.
 - Initial air effort will be utilized to destroy artillery and missile sites and reserve troop concentrations.
 - During Phase 1, emphasis will be placed on close support of front line troop and shift to forces in the exploitation of D+2.
- Coordinating instructions.
 - Notify 1st Army TASE 45 min prior to time required for "on-call" missions.
 - Tactical air support procedures, 1st Army SOP.

4. ADMINISTRATION AND LOGISTICS - ADMINO 2

5. COMMAND AND SIGNAL

- Signal.
 - Annex H, Signal to OPORD 18.
 - ACT call words and frequencies, 1st Army SOP.
 - Target marking, 1st Army SOI.
- Command.

Annex C (operation overlay)

ACKNOWLEDGE.

GRIFFING
Maj Gen

Distribution: A

- Preplanned CAS Missions
- Preplanned Interdiction Missions (prepared daily)

OFFICIAL:

/s/ Smith
SMITH

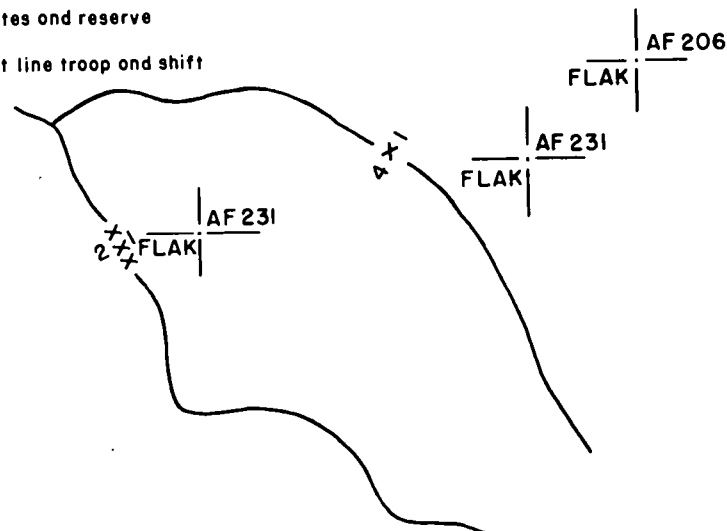


Figure 17. The air fire plan appendix.

Classification

Copy Nr 14
1st Inf Div
PACIFIC CITY (1935), BAHA
132000 Sept 19__

Appendix 2 (Artillery Fire Plan) to Annex C
(Fire Support Plan) to OPORD 18.
Mop: BAHA, 1:50,000, CAPE FORTH-ATHENAL.

1. Boundaries, LD, axis of advance, concentrations planned -- see overlay.
2. Scheduled fires.
 - a. Countermortar program. Fire parallel sheaf, center range, shell HE, first valley VT, subsequent valleys 1/2 quick and delay.
 - b. Tank assembly areas. Fire open sheaf, 1/2 C range spread, first valley, Shell HE, fuze VT or time, subsequent valleys 1/3 shell HE, fuze Q: 1/3 shell HE fuze delay. 1/3 fuze Q, shell WP.
 - c. Smoke missions. Shell HC. Smoke for period indicated or until requested to lift as follows:
 - 1st How Bn, 8th Arty -- AL 201 H-Hr to H+30, provide own observer.
 - 1st How Bn, 10th Arty -- AK 324, H-Hr to H+30, provide own observer.
3. Medium batteries be prepared to deliver on-call smoke missions.
4. Request 3d Inf Div Arty schedule AL 345 early in preparation.
5. Request Corps Arty: Sked AF 60, AF 240, and AF 279; include hostile artillery locations in counterbattery program.
6. Chemical targets (G1) on-call, take priority over all other targets when called.
7. Air strikes marked by red smoke or alternate green smoke as directed. Acknowledge.
8. Emergency signal for lifting all fires -- Green Star Cluster.

Tobs: A -- Psn Areas and Zones of Fire

Distribution: A
2d Inf Div
3d Inf Div
4th Armd Div

OFFICIAL
/s/ Smith
SMITH

GRIFFING
MAJ GEN

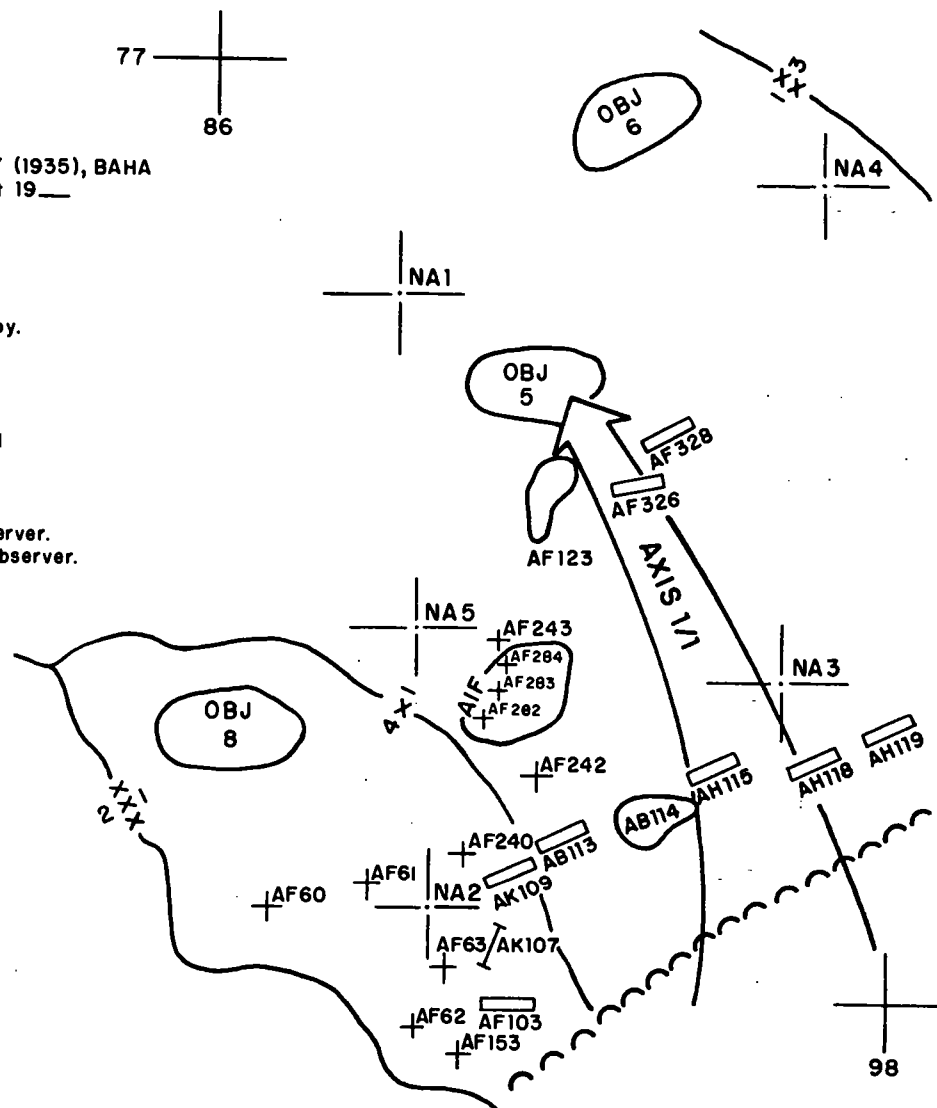


Figure 18. Graphical portion of the artillery fire plan.

TGT Ref Nr	Description	Coordinates	ALT	HOB	Size	Az/ Bearing	Req Cov	MSD			NIGA		Tree Blow Down	RI	Remarks
								UE	WE	WP	Rad- ius	GZ Int			
AB113	Pos und con	94606600	48		400x 100	1400									Scheduled
AB114	Assy area	95406610	47		900x 1400										Scheduled
AF60	Eng Sup Dp	84836690	48												Req Corps Arty
AF103	Pos und con	95406220	45		600x 200	1330									Scheduled
AF123	Pos und con	90809310	48		400x 150	1200									Smk, HC, On Call. GB Bas on Call, 10 hectares.
AF153	AW posn	92106215	46												Scheduled
AF240	Trench	92956620	45			1225									Req Corps Arty Scheduled
AF242	Trench	60707740	43			600									Smk on Call. HC.
AF279	Trench	60107650	43		400	700									Req Corps Arty Scheduled
NA 1	Msl Fire Con	91507165	41	407			P90	5800	4400	2500	800	1000	1900	900	Will be fired early.
NA 2	Trps in Foxholes	91376520	62	115	530		1/3	1200	1900	1700	400	180	550	600	
NA 3	Trps in Foxholes	96416582	58	115	550		1/3	1200	1900	1700	400	180	550	600	
NA 4	Trps in APC's	98107684	46	465	1000		1/3	8400	6100	3300	1100	1800	1900	1090	On call. Pos B-2, Golf, 50 KT

LEGEND: Req Cov: Commander's required percentage of coverage
MSD: Minimum Safe Distance
NIGA: Neutron induced Gamma activity.

GZ Int: Ground Zero Intensity.
RI: Radius of integration

Figure 19. Target list of the artillery fire plan.

BN	Btry	-16	-14	-12	-10	-8	-6	-4	-2	H- Hour	+2	+4	+6	+8	+10	Conc on call	Remarks
1/8th		<u>AF 62</u> 24	<u>AF 242</u> 24	<u>AF 103</u> 12				<u>AF 153</u> 12	<u>AF 123</u> 24								Smk AF 123 on Call
1/10th		<u>AP 243</u> 24	<u>AF 63</u> 24	<u>AF 61</u> 24		<u>AF 123</u> 36											GB, 320 rd , on-Call after H-Hr.
6/50th		<u>AF 326</u> 36	<u>AB 113</u> 36	<u>AB 114</u> 36		<u>AH 115</u> 18		<u>AH 118</u> 18	<u>AF 242</u> 36								Smk AF 242 on Call
1/11th	A	<u>NA2</u> 2 Kt		<u>AK 107</u> 8	<u>AH 103</u> 8		<u>AF 240</u> 8		<u>AF 60</u> 8	<u>AF 109</u> 8							Position A-3
1/11th	B/1	<u>NA1</u> 20 Kt															Position B-4
1/11th	B/2	<u>NA3</u> 20 Kt															Position B-2

Figure 20. Schedule of fires of the artillery fire plan.

d. The artillery fire plan shown in figures 18 through 21 is for a preparation beginning at H-16 minutes and ending at H+10 minutes. The same format is equally applicable in preparing a program of fires or a counterpreparation except that the time of opening fire cannot be predetermined.

FIRING UNITS	A I F		
1st How Bn, 8th Arty	AF 282		
1st How Bn, 10th Arty	AF 283		
6th How Bn, 50th Arty	AF 284		

Figure 21. Table of groups of fires on call of the artillery fire plan.

APPENDIX IV

TARGET ANALYSIS

1. Target Analysis

Although time and the situation will not usually permit a target analysis in such detail, the following list of considerations insures a logical and orderly examination of all factors in determining the most effective means of attacking a target:

(Classification)

1. SITUATION AND COURSE OF ACTION

a. Situation of opposing forces.

- (1) Enemy situation. Include information that will aid in target analysis.
- (2) Friendly situation. Include information that will aid in attacking the target.

b. Target characteristics.

- (1) Target description. Include type (personnel, materiel, terrain features), numbers of personnel, quantity of materiel, and activity.
- (2) Vulnerability. Include type and amount of cover, type of materiel, type of construction, mobility, and density of personnel and materiel.
- (3) Physical location and altitude. Include grid reference and altitude of target, location with respect to supported unit and terrain features, and distance from friendly troops.
- (4) Accuracy of location. Give estimated accuracy of target location.
- (5) Size and shape of target area. Give the dimensions and shape of the target area, and distribution of personnel and materiel within the area.
- (6) Terrain and weather. Include brief analysis of weather and terrain in the target area; include any terrain features affecting the means and methods of attack.

c. Target capabilities. Discuss the capabilities of the target, as they affect the accomplishment of the mission of the supported unit; if a terrain feature(s), show how it (they) affects enemy capabilities.

d. Other factors. List and discuss any and all of the following factors and any additional ones that will affect the choice of firepower, delivery means, and method of attack:

- (1) Urgency of attack. Usually determined by the type of target (static or fleeting) and its capabilities.
- (2) Enemy countermeasures. State ability of the enemy to minimize the effects of firepower; consider capabilities of the enemy to prevent effective delivery and to bring countermeasures against our delivery means after attack.
- (3) Enemy discipline and morale. State factors that will aid in determining the amount of firepower required to neutralize personnel targets.
- (4) Creation of obstacles. Discuss any considerations concerning desirability or undesirability of creating obstacles by attacking the target.

(Classification)

(Classification)

(5) Civilian casualties. Show approximate number of civilians in the target area and the estimated effect of causing excessive casualties.

(6) Surprise. Discuss any particular methods desired to obtain surprise, including least expected time of attack, means of delivery, and restrictions on registration.

e. Means of attack. Note available types of firepower and required amounts with which it is practicable to attack the target; show most practicable delivery means in each case.

2. ANALYSIS OF MEANS OF ATTACK

Discuss the application of each means of attack on the target characteristics (par. 1b), target capabilities (par. 1c), and other factors (par. 1d). For each means of attack, include—

a. Location of center of impact which will obtain greatest effect; include optimum height of burst for nuclear weapons.

b. Effect of available supply rate.

c. Estimate of enemy casualties and materiel damage.

d. Estimate of civilian casualties.

e. Estimate of obstacles created.

f. Precautions required for friendly troops.

Note. The analysis of each of the means of attack may be shown in an annex.

3. COMPARISON OF MEANS OF ATTACK

Summarize the outstanding advantages and disadvantages of each means of attack and determine which offers the most promise of success.

4. DECISION OR RECOMMENDATION

a. Type and amount of firepower and delivery means.

b. Unit(s) to fire.

c. Grid reference and altitude of desired center of impact; height of burst when applicable.

d. Time of attack.

e. Safety precautions, special coordination, and warnings required.

f. Method for determining post strike analysis.

(Classification)

2. Nuclear Weapons Target Analysis

The following procedure for nuclear weapons target analysis insures an orderly method for determining the most effective nuclear weapon(s) for the attack of a target:

a. Identify pertinent information (Radius of Target, Minimum Safe Distance, Command Guidance, etc.)

b. Determine target analysis method to be used based on target information; Select DGZ and type burst (Low or High, Air or Surface).

c. Eliminate obviously unsuitable weapons.

d. Determine data for—

(1) Coverage.

(2) Troop safety.

(3) Limiting requirements.

e. Based on 4 above, eliminate unsuitable weapons.

f. Determine priority considering—

(1) Best weapon for this target.

(2) Tactical situation and characteristics of suitable weapon systems.

g. Make recommendations. Refer to FM 101-31 for details on above procedures.

APPENDIX V

FIRE CAPABILITIES CHECKLIST METHOD OF PREPARING SCHEDULES OF ARTILLERY FIRES

1. Purpose and Scope

The purpose of this appendix is to illustrate a procedure for preparing a schedule of fires by using the fire capabilities checklist. This procedure may be used at all echelons of artillery for planning the schedule of fires. The fire capabilities checklist does not in any way replace the overlay and concentration type of fire plan; rather, it assists in the scheduling of fires where large amounts of artillery are involved.

2. Procedure

The use of the checklist in preparing a sched-

ule of fires, although primarily mechanical, is flexible and can be arranged to reflect specific policies for attack of targets, phasing of a preparation, maintenance of neutralization, or other special considerations. In the following example, the commander's criteria specified that one medium and one heavy battalion be used to attack hostile batteries.

a. From the fire capabilities overlay and concentration overlay, enter the heavy battalions on the left and the medium battalions on the right of the fire capabilities checklist (fig. 22). Indicate the targets each battalion (battery) is

Heavy artillery battalions				Medium artillery battalions				
Order of planning		Priority for scheduling targets	Number of battalions that can hit target	Target	Number of battalions that can hit target	Priority for scheduling targets	Order of planning	
Number of targets battalion can hit							Number of targets battalion can hit	
Heavy battalions 1/60 1/70							Medium battalions 1/50 3/50	
				X101				
				XA10				
				X104				
				X106				
				XB11				

Figure 22. Fire capabilities checklist showing battalions and targets.

capable of attacking by placing a diagonal line in the appropriate blocks. A separate checklist may be made for specific phase; i.e., a counter-battery phase or a period during which safety measures for aircraft delivering airstrikes require restrictions on artillery fire.

b. Determine and enter the number of targets each battalion is capable of attacking. Then, enter the number of battalions which can attack each target (fig. 23). Establish the order of planning for the battalions by indicating the battalion which can attack the fewest targets as first in order of planning, the battalion which can attack the next fewest targets as second in order of planning, etc. Where more than one battalion can attack the same number of targets, assign the order of planning from left to right on the checklist.

c. Establish as the first target in priority for scheduling the target which can be attacked by the fewest battalions, the target which can be attacked by the next fewest battalions as second, etc. (fig. 24). Where more than one target can be attacked by the same number of battalions, assign the priority for scheduling from top to bottom. On the fire capabilities checklist in figure 24, the 1st Howitzer Battalion, 70th Artillery, is number 1 in order of planning. Concentration XA10, X114, X121, and XB16 can be attacked by only one battalion. Since the assignment of priority for scheduling is from top to bottom when more than one target can be attacked by the same number of battalions, concentration XA10 is number 1 in priority.

d. As the targets are planned, a schedule of fires worksheet is prepared (fig. 25). Plan first

the battalion capable of attacking the fewest targets; then of the targets that the battalion can attack, plan first the target which can be attacked by the fewest battalions. As each target is planned, the time of firing is indicated on the schedule of fires worksheet and a second diagonal line is drawn through the block on the checklist (fig. 24) corresponding to the battalion to fire. After planning for a specific target is complete, place a zero over the diagonal marks under the battalion(s) not to be scheduled for the target.

e. The corps artillery commander directed that two battalions fire simultaneously on each enemy battery, preferably one to be a medium battalion. Therefore, plan first the medium battalion; then, plan a heavy battalion.

f. If a group of fires is scheduled in the preparation, all concentrations of the group should, if possible, be fired on simultaneously.

g. The following symbols are used:

/ Target is within the fire capabilities of the battalion indicated.

X Target is to be attacked by the battalion indicated.

∅ No fire is planned on the target by the battalion indicated.

h. A worksheet for maintenance of neutralization is shown in figure 26. The time available to each battalion is determined from the completed worksheet for the schedule of fires. The share of targets is determined by dividing the total time available by the total number of targets to be attacked. Adjustments are then made according to the fire capabilities and time available to each battalion.

Order of planning										Priority for scheduling targets	Number of battalions that can hit target	Target	Number of battalions that can hit target	Priority for scheduling targets	Order of planning					
9	8	6	10	1	2	3	7	4	5						3	1	4	2	5	6
Number of targets battalion can hit															Number of targets bottalion can hit					
10	8	7	12	4	4	4	7	5	5						5	3	5	3	5	6
Heavy battolions															Medium bottolions					
1/60	2/60	3/60	1/61	1/70	3/70	4/70	1/71	2/71	3/71						1/50	2/50	3/50	5/50	2/51	3/51
										5	2	X101	2	13						
										1	1	XA10	0							
										6	2	X104	2	14						
										25	5	X106	2	15						
										16	3	XB11	0							
										17	3	X107	1	1						
										7	2	X108	1	2						
										8	2	X109	1	3						
										26	5	XB12	2	16						
										9	2	X110	1	4						
										18	3	X112	1	5						
										10	2	X113	0							
										11	2	XA12	3	19						
										2	1	X114	1	6						
										12	2	X115	1	7						
										13	2	X116	1	8						
										14	2	X117	0							
										22	4	X119	2	17						
										15	2	X120	1	9						
										3	1	X121	0							
										23	4	XC14	0							
										19	3	X122	2	18						
										20	3	X123	1	10						
										24	4	X124	1	11						
										21	3	XA14	1	12						
										4	1	XB16	0							

Figure 23. Fire capabilities checklist showing order of planning and priority for scheduling targets.

Order of planning										Priority for scheduling targets	Number of battalions that can hit target	Target	Number of battalions that can hit target	Priority for scheduling targets	Order of planning					
9	8	6	10	1	2	3	7	4	5						3	1	4	2	5	6
Number of targets battalion can hit															Number of targets battalion can hit					
10	8	7	12	4	4	4	7	5	5						5	3	5	3	5	6
Heavy battalions															Medium battalions					
1/60	2/60	3/60	1/61	1/70	3/70	4/70	1/71	2/71	3/71						1/50	2/50	3/50	5/50	2/51	3/51
										5	2	X101	2	13						
										1	1	XA10	0							
										6	2	X104	2	14						
										25	5	X106	2	15						
										16	3	XB11	0							
										17	3	X107	1	1						
										7	2	X108	1	2						
										8	2	X109	1	3						
										26	5	XB12	2	16						
										9	2	X110	1	4						
										18	3	X112	1	5						
										10	2	X113	0							
										11	2	XA12	3	19						
										2	1	X114	1	6						
										12	2	X115	1	7						
										13	2	X116	1	8						
										14	2	X117	0							
										22	4	X119	2	17						
										15	2	X120	1	9						
										3	1	X121	0							
										23	4	XC14	0							
										19	3	X122	2	18						
										20	3	X123	1	10						
										24	4	X124	1	11						
										21	3	XA14	1	12						
										4	1	XB16	0							

Figure 24. Fire capabilities checklist showing planned targets.

	-30	-25	-20	-15	-10	-5	H Hr	+ 5
1st How Bn, 50th Arty								
2d How Bn, 50th Arty	X104	X122	XA12					
3d How Bn, 50th Arty								
5th How Bn, 50th Arty	X124	X106	XB12					
2d How Bn, 51st Arty								
3d How Bn, 51st Arty								
1st Gun Bn, 60th Arty								
2d Gun Bn, 60th Arty								
3d Gun Bn, 60th Arty								
1st Gun Bn, 61st Arty								
1st How Bn, 70th Arty	X104		XA12					
3d How Bn, 70th Arty		X122						
4th How Bn, 70th Arty	X124	X106	XB12					
1st How Bn, 71st Arty								
2d How Bn, 71st Arty								
3d How Bn, 71st Arty								

Figure 25. Worksheet for a schedule of fires.

Unit	Time available	Share of targets	Targets assigned	Ammo
1st Gun Bn, 60th Arty	10 min	3	XB11, X101, X110, X116, X120	90 rd
2d Gun Bn, 60th Arty	10 min	3	X114, XA12, X115, X117, X122	90 rd
3d Gun Bn, 60th Arty	10 min	3	X121, X113	36 rd
1st Gun Bn, 61st Arty	15 min	5	XB16, X107, X123, XA14	72 rd
1st How Bn, 70th Arty	5 min	2	X104, X108, X109	24 rd
4th How Bn, 70th Arty	5 min	2	XC14, X124	16 rd
2d How Bn, 71st Arty	10 min	3	X112, X119	16 rd
3d How Bn, 71st Arty	15 min	5	XB11, X106, XB12	24 rd
Total	80 min	26	175-mm gun-288 rd 8-inch how-80 rd	

Figure 26. Worksheet for maintenance of neutralization.

APPENDIX VI

FIRE SUPPORT COORDINATION CHARTS AND FORMS

1. General

The requirement for rapid decisions to effect appropriate fire coordination dictates the need for graphic display of information in the fire support coordination center (FSCC) or fire support element (FSE). Specific information required is determined by the fire support coordinator operating the FSCC or FSE and should conform to the internal operating procedures of the headquarters.

2. Fire Support Coordination Center or Fire Support Element Charts

In addition to situation maps, fire capabilities overlays, and planning maps for future operations, the charts in figures 27 through 32 have been found to be helpful in furnishing a ready reference for much used or needed information. These charts are not intended to be mandatory.

Units	Code name	Call sign		Location		Time reported	Mission	Active		Remarks
		Tel	Rad	Clear	Coded			Tubes	Lchr	
1/3	Cassidy	Smoker	Artery	320561	NA12B7	071310	DS 1st BG	(18)		
A	Corky	Bender	York	291430	TL67G9	070600		6		
B	Blackie	Winger	Stacey	250367	MH1605	070900		6		
1/11	Lear	Congo	Topeka	300310	JO27F1	070800	GS	4	2	
101 Arty Gp	Comanche	Dagwood	Stucco	470819	AM27H7	061900	GS, Reinf 1st Div Arty	(60)		
2/50	Danger	Barrel	Tango	410620	BX80I6	070600		18		
3/51	Potter	Jason	Penny	381962	DE10G6	061400		18		
4/70	Dancer	Shamrock	Caesar	520320	GH27A9	061500		12		
5/71	Chacha	Perry	Sapphire	370512	XF98Z8	061000		12		
102 Arty Gp										
1/50										
2/51										
3/70										
4/71										
3/82										

Figure 27. Organization for combat and status of units.

Status of Ammunition

Nonnuclear.

ASR period	to	Nr tubes	Total rd
105H	100	162	16, 200
155H	90	192	17, 280
175G	80	12	960
8" H	85	100	8, 500
280G	50	6	300

Expended as of

105H	9, 200
155H	8, 750
175G	404
8" H	2, 416
280G	108

Figure 28. Status of ammunition.

Unit designation	Coded	Call Sign		Location		Operational time	Remarks
		Tel	Rad	Clear	Coded		
1st Div Main Altn	Tiger Hawk	Sabre	Apache	761892	NABLST	051200	Corps reserve
2d Div Main Altn		Sabre	Apache	650800	YWTCBD	051400	
3d Div Main Altn							
4th Div Main Altn							
FATOC Main FATOC Altn							

Figure 29. Fire support coordination center status.

Ship	Call sign	Msn	Naval Gunfire Spot Team		
			Call sign	Location	
				Clear	Coded
DD 107	Duster	DS 1st BG	Kola 21	320561	NACZYT

Figure 30. Fire support coordination center status.

Type	Code		Unit		Location		Readiness condition	Remarks
	Nr	Name	Design	Coded	Clear	Coded		
A	1001	Alice	4/70	Dancer	520320	GH27A9	A ¹	

Note: Readiness conditions may be established in the standing operating procedure and designated as follows:

A¹--Minutes notice required for firing.

Figure 31. Nuclear weapons readiness status.

Could be separate columns

Figure 32. Nuclear mission status.

Date or
Period or
Operation

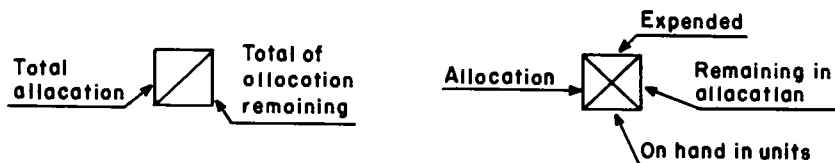
(Classification)
Nuclear Weapons Allocation and Suballocation

Current Pasting

Operation		Date																				Time		Group		Month					
System	8" Haw		280mm Gun					Honest John					Locrasse			Corporal				Redstone		Total by Yield (Note 1)									
Weapon and Yield	BRAVO 1	CHARLIE 2	CHARLIE 2	ECHO 10	FOXTROT 20	GOLF 50	DELTA 5	ECHO 10	FOXTROT 20	GOLF 50	CHARLIE 2	DELTA 5	ECHO 10	DELTA 5	ECHO 10	FOXTROT 20	GOLF 50	JULIETT 500	LIMA 2000	1	2	5	10	20	50	500	2000				
Total to Corps	(Note 1)		20 18								22 7										30 16	42 25									
Retained by Corps	(Note 2)		0 2 18								3 1 7	2 2									10 8	5 4									
1st Div			5 0 4								6 4 2										5 2	11 6									
2d Div			5 0 4								5 4 1										2 2	10 5									
3d Div			5 0 5								5 3 2										3 1	10 7									
4th Armd Div			3 0 3								3 3 0										10 3	6 3									
Special Ammo load																															

Note 1:

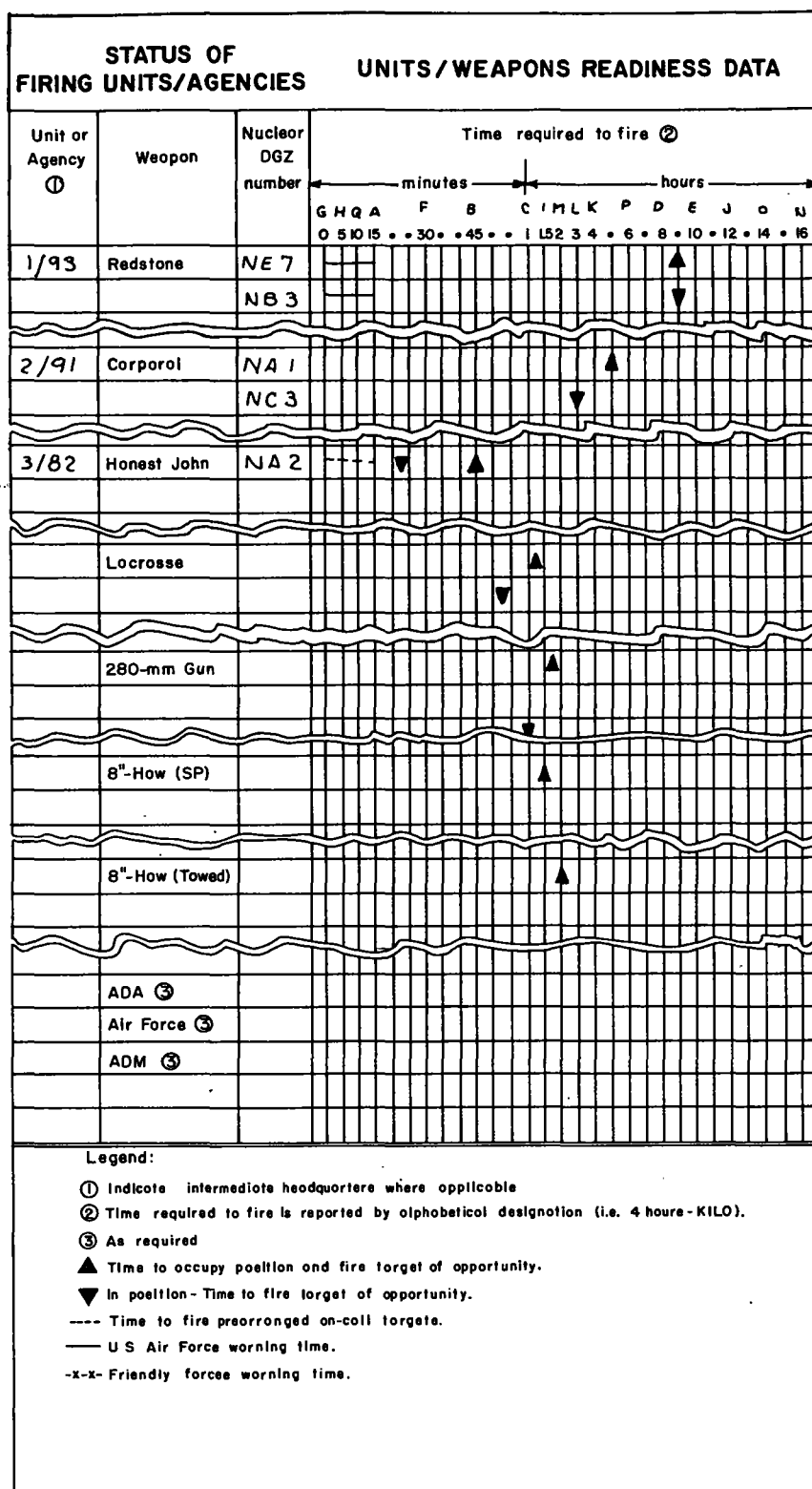
Note 2:



(Classification)

Figure 33. Nuclear weapons allocation and suballocation.

(CLASSIFICATION)



(CLASSIFICATION)

Figure 34. Status of firing units/agencies—units/weapons readiness data.

NONNUCLEAR RKT/MISSILE INFORMATION

PERIOD or DATE						
WEAPON	LACROSSE (HE)	HONEST JOHN (HE)	HONEST JOHN (CHEM)			
TO CORPS (Note 1)	50 38	50 42	10 10			
RETAINED CORPS	(10) (10)	(10) (10)	(4) (4)			
1st OIV	(15) (5)	(10) (6)	(2) (2)			
2nd OIV	(10) (9)	(10) (9)	(1) (1)			
3d OIV	(5) (5)	(10) (9)	(1) (1)			
4th ARMD DIV	(15) (9)	(10) (8)	(2) (2)			
APPLIC. TO DIV						

Note 1: Allocation  Remaining in allocation

(CLASSIFICATION)

Figure 35. Nonnuclear rocket/missile information.

3. Nuclear Fire Support Request

a. The proper method of completing a nuclear fire support request form (fig. 36) is outlined below. The bottom portion of figure 36

is designed to facilitate internal coordination. It is based on the nuclear standing operating procedure and internal fire support element procedures.

Item A. Warning.

- (1) The initial element of the message is a warning to indicate the type of message that follows. This warning differentiates between targets of opportunity and planned targets. The differentiation can be by code word prescribed at field army level. In this study, RED is used to indicate a request for nuclear support on a target of opportunity and BLUE is used to indicate a request for nuclear support on a planned target.
- (2) Examples:

Example	Meaning
FIRE MISSION RED	Request for nuclear support on a target of opportunity follows.
FIRE MISSION BLUE	Request for nuclear support on a planned target follows.

Item B. Nature of target and damage required.

- (1) The description of the target should be as complete as possible including, as far as is known, all elements that may influence a target analysis. Individual elements within the target complex are identified by coordinates. Target size is designated by limiting coordinates or by a radius in meters. The damage required for each element of the target complex is included either as destruction or neutralization.
- (2) Examples:

Example	Meaning
CP IN MASONRY BLDG VIC NP367459 DESTRUCTION.	Elements of the target complex are a command post in a masonry building in the vicinity of coordinates NP367459. At least $\frac{1}{3}$ coverage desired.
TK ASSY AREA VIC NP374452 NEUTRALIZATION.	A tank assembly area in the vicinity of coordinates NP374452. From $\frac{1}{10}$ to $\frac{1}{3}$ coverage desired.
RESERVE INF ASSEMBLY AREA NP367459 RADIUS 800 Destroy.	The target is an infantry reserve assembly area the center of which is at coordinates NP367459. The target approximates a circle with an 800-meter radius. Destruction is desired.

Format for Nuclear Fire Support Request.

To (from) _____	Time sent (rec) _____
A. Warning	A _____
B. Target--damage required	B _____

C. DGZ	C _____
D. Altitude DGZ	D _____
E. H _b	E _____
F. Yield	F _____
G. TOT	G _____
H. Means of attack	H _____
I. Troop safety	I _____

J. Type of analysis	J _____

K. Remarks	K _____

L. Conc nr	L _____

Fire Support Coordination Agency Action

App /Disap _____ by _____ Time _____	Requesting unit notified at _____
Time/initials	Firing unit notified at _____
Concurrences: G2 _____	Fired at _____
G3 _____	Warning: Army avn _____
NGFO _____	TAF _____
ALO _____	Troop units _____
Chem _____	Notification: Higher hq : _____
Eng _____	Request fwd to _____ for action
Aja hqs _____	(Higher hq)
Tactical damage assessment	Higher hq
GZ _____	Action taken: App _____
Yield _____	Disap _____
H _b _____	Firing unit _____
Remarks: _____	Fired at _____

Example 7. 1. App V.

Figure 36. Nuclear fire support request form.

Items C. and D. Horizontal location and altitude of DCZ.

- (1) Selection of the DCZ is based on the nature of the target and must be within the limits of the analysis performed by the originating unit. The horizontal location is expressed in universal transverse mercator coordinates accurate to the nearest 10 meters; the altitude is expressed to the nearest meter. The designation of the 100,000-meter grid square is included for all delivery means. The grid zone designation is included if it is anticipated that Corporal, Redstone, Sergeant, Pershing, or Air Force units may be used.

(2) Examples:

<i>Example</i>	<i>Meaning</i>
14SNP36745986	Coordinates of desired ground zero to nearest 10 meters.
476	Altitude of desired ground zero to nearest meter.

Item E. Height of burst. The desired height of burst above ground zero is based on the effect desired and command guidance. The desired height is expressed as the number of meters above or below the surface.

Item F. Yield.

- (1) The yield desired is based on the nature of the target and is expressed in kilotons or megatons. Fractional yields are expressed as tenths of a kiloton. The word POINT is used to represent the decimal point. Yields less than 1 kiloton are expressed as ZERO POINT

(2) Examples:

<i>Example</i>	<i>Meaning</i>
20 KILOTONS	Desired yield is 20 kilotons.
ZERO POINT FIVE KILOTON.	Desired yield is 0.5 kiloton.

Item G. Time on target (TOT).

- (1) Time on target is based on the nature of the target and the scheme of maneuver. When multiple bursts are desired, the word MULTIPLE follows the date-time group. It is expressed in local time as a seven-digit date-time group or as on call. On-call missions may include the period during which required and/or minimum time (in minutes) required from "call" to burst.

(2) Examples:

<i>Example</i>	<i>Meaning</i>
090400S	Desired burst time is 0400 (CST) on the 9th.
090400S MULTIPLE	Desired burst time is 0400 (CST) on the 9th. Another burst is planned (has been approved) in this vicinity as + this time.
ON CALL 090400S TO 091000S 30 MIN.	Mission to be on call between 0400 and 1000 (CST) on the 9th. Order to fire will proceed burst time by at least 30 minutes.

Item H. Means of attack.

- (1) The means of attack is based on the nature of the target and the troop safety considerations. It is expressed as an abbreviation of the delivery means or as prepositioned.

(2) Examples:

<i>Example</i>	<i>Meaning</i>
8 HOW	8-inch howitzer is the desired delivery means.
8 HOW 280 G	Desired delivery means, in order of desirability, is either the 8-inch howitzer or the 280-mm gun.

Item I. Troop safety requirements.

- (1) Troop safety is based on planned disposition of friendly troops at burst time if there is any possibility of effect. May be expressed as a series of coordinates describing friendly positions; a prearranged phase line; a radius and distance from a recommended ground zero; maximum allowable circular error probability (in meters) if a delivery means has

not been specified; or a description of troop attitude as warned protected, warned exposed, or unwarned exposed. In addition the degree of risk assumed is included as EMERGENCY, MODERATE, OR NEGLIGIBLE.

(2) Examples:

<i>Example</i>	<i>Meaning</i>
PHASE LINE BRAVO EXPOSED	Friendly troops will be disposed along phase line BRAVO. They will be warned but exposed. Moderate risk is assumed.
WARNED MODERATE.	
CEP 500 NEGLIGIBLE	Maximum allowable circular error probability is 500 meters, negligible risk allowed.

Item J. Type of analysis. If a target analysis has been performed by the requesting subordinate unit, the type of analysis performed will be specified as graphic, precomputed, or numerical.

Item K. Remarks. Add any additional information required. Prohibition of spotting rounds may be included here.

Item L. Concentration number.

- (1) The concentration number is selected from those assigned the initial requesting unit. It may designate a group of fires.
- (2) Examples (number system as described in unit standing operating procedure) :

<i>Example</i>	<i>Meaning</i>
NA1	N = Nuclear target. A1 = First nuclear target planned by 1st Infantry Division.
NE1	First nuclear target planned by 1st Corps.

b. When an element is not known or not required, it may be omitted. However, the following elements will always be included:

- (1) Warning.
- (2) Target description and damage requirement.
- (3) Desired height of burst.
- (4) Desired time of burst (may be expanded in remarks to show earliest or latest permissible time of burst).
- (5) Troop safety requirements.
- (6) Concentration number.

c. Designating each element by a letter facil-

itates transmission by eliminating the need to transmit the element title. For example, instead of transmitting DELIVERY MEANS, only HOTEL need be transmitted. To avoid error, each identifying letter (A through L) should be transmitted with those omitted indicated by the word omit; e.g., HOTEL OMIT.

4. Fire Support Coordination Forms

In addition to the nuclear fire support request (par. 3), there are certain other forms which may be necessary. They should be designed and based on unit SOP. Examples of FSCC forms are shown in figures 37 through 43.

Target nr
Time/Date

1. Source: G2.
2. Target Description: Tank platoon.
3. Location: 378121.
4. Nearest Friendly Troops: 6,000 meters southwest.
5. Observation: Air.
6. FSCC Action: Air request nr 26-13-12.

Use

This form may be used to record requests for fire support which do not state the type of fire desired; i. e., air, artillery, etc. The fire support coordinator determines the most suitable type of attack.

Figure 37. Fire support request form.

CLOSE AIR SUPPORT FORM	
SECTION I ARMY MISSION DATA	
1 Army Mission Request No _____	2 Unit _____ 3 Priority _____
4 Target Coordinates/DGZ _____	5 Tgt No _____
6 Target Description (for nuclear targets, include size and details of target make-up): _____ _____ _____	
7 Results desired (Fill in either subitem 7a or 7b): <u>Form will be classified SECRET when subitem 7b is filled in.</u>	
a Conventional _____	
b Nuclear: (1) _____ % casualties (2) _____ % probability (3) _____ % damage to equipment (4) _____ % probability (5) _____ fallout acceptable (r per hr) (6) _____ Max acceptable CEP (7) Recommended Yield: _____ (8) Recommended Burst Height: _____	
8 Desired Time on Tgt: _____ 9 Latest Time on Tgt: _____	
10 a Distance from friendly troops: _____ (Meters) b Direction: _____ (Degrees Magnetic)	
11 Control Information: _____	
12 Tactical Significance: _____ _____	
13 Spot report required: _____	
14 Remarks: _____ _____	
SECTION II ARMY ACTION	SECTION III ASOC ACTION
Received at _____ (Unit-Date-Time) By _____ B/L Checked _____ (Init) (Init-Date-Time) Coordinated Arty Air Def Avn _____ (Init) Approved/Disapproved _____ (Init-Date-Time) Reason for disapproval _____ _____ Fwd to _____ By _____ (Unit) (Init-Date-Time) GLO notified: _____ (Init-Date-Time) Unit notified: _____ (Init-Date-Time)	Received at ASOC _____ (Date-Time) By _____ B/L Checked _____ (Init) (Init-Date-Time) Approved/Disapproved _____ (Init-Date-Time) Reason for disapproval _____ _____ Returned to Army _____ By _____ (Date-Time) (Init)
SECTION IV AIR MISSION DATA	
1 Mission No _____	9 Special Weapon Data:
2 Unit _____	a Weapon _____ Line _____ Column _____
3 Call Sign _____	b Core _____ Line _____ Column _____
4 No & Type Acft/Missile _____	c Burst Height _____
5 Time on Tgt _____	d CEP _____
6 Armament _____	10 Unit notified _____ (Init-Date-Time)
7 Control Info _____	11 SCC notified _____ (Init-Date-Time)
8 Army Mission Data _____ _____ _____	12 Other coordination: (ALO, TDP, Shanicle, Shoran, Air Coordinator)

Figure 38. Close air support form, front side.

EXPLANATORY NOTES FOR CLOSE AIR SUPPORT FORM

This form will be classified SECRET when requesting close air support using nuclear weapons.

SECTION I: To be used by any Army unit requesting close air support.
When transmitting Section I by electrical means, only item number and information required will be included.

- Item 1 --- According to SOP.
- 2 --- Requesting unit.
- 3 --- Requesting unit priority. This priority will be modified, as required, at field army/independent corps prior to forwarding to ASOC.
- 4 --- DGZ to be entered on close air support requests using nuclear weapons; target number according to SOP.
- 7 --- Fill in subitem 7a for close air support using conventional weapons.
Fill in subitem 7b for close air support using nuclear weapons. "NOTE: Subitem 7b(5) pertains to contamination of the target area."
- 11 --- FAC, ALO, TDP recommended.
- 12 --- Aids field army/independent corps in establishing overall priority.

SECTION II: To be used by echelon above requesting unit or by field army/independent corps.

SECTION III: For ASOC action as required.

SECTION IV: Details of mission to accomplish army requirement.

- Item 1 --- According to TAF SOP.
- 2 --- Squadron flying the mission.
- 3 --- SOP.
- 6 --- SOP load designation code.
- 7 --- FAC, TDP, etc.
- 8 --- Target information from Section I.

Figure 39. Close air support form, reverse side.

(Security Classification)

FROM: *CG, 45th U.S. INF DIV*
 TO: *CG, SEVENTH U.S. ARMY*

AIR RECONNAISSANCE REQUEST FORM

- L. ORIGINATOR'S SERIAL NUMBER: *45th DIV 278*
- M. TYPE OF RECONNAISSANCE: Photo, Vertical.
- N. NATIONAL MAP SERIES AND SHEET NUMBER: *AMS 4873*
- O. DESCRIPTION OF TARGET AND MAP REFERENCES:
AREA, NB 637485 - NB 637513 - NB 653156 -
NB 655490
- P. OBJECT OF THE REQUEST AND RESULTS DESIRED:
SIZE OF UNIT IN BIVOUAC.
MOVEMENT OR INDICATIONS, IF ANY.
TYPE TANKS, SP GUNS.
- Q. PHOTO SCALE OR LIMITS ACCEPTABLE: *1:10000 OR LARGER*
- R. NUMBER OF PRINTS, PLOTS OR REPORTS REQUIRED: *NONE*
- S. DELIVERY ADDRESS, DATE, TIME: *N/A*
- T. LATEST ACCEPTABLE TIME AND DATE: *17/600 MARCH*
- U. PRIORITY: *ROUTINE*
- V. SPECIAL INSTRUCTIONS:
CONFIRM ARMORED UNIT IN VIC. INFORMATION REQUIRED
ASAP. PRIORITY I, HOT REPORTS, IMMEDIATE
REQUEST

Signature of Requesting Officer

Signature of Approving Officer

Rank, Position

Rank, Position

(Security Classification)

Figure 40. Tactical air reconnaissance support form, front side.

NOTE: The letters A to K have special significance for certain organizations, and are purposely omitted from the form.

FM 6-20-2

- L. ORIGINATOR'S SERIAL NUMBER. Each request will be given a serial number consisting of a prefix followed by a number commencing with number 1 at the beginning of the year. Further requests will be numbered consecutively throughout the year. Prefixes will be the Headquarters demanding, e.g., LANDCENT, AFCENT, AFNORTH, 4ATF.
- M. TYPE OF RECONNAISSANCE. For example: visual, electronic, weather, fire control or photographic reconnaissance (vertical, oblique or reprint photography). This paragraph should be left blank unless it is understood fully what the selected type of reconnaissance can accomplish.
- N. NATIONAL MAP SERIES AND SHEET NUMBER. Owing to the large variety of maps used both in training and operations by nations, these details must be given in full.
- O. DESCRIPTION OF TARGET AND MAP REFERENCE. So as to leave the recipient of the request in no doubt as to the requirements, it is necessary to give an exact location, e.g., railway bridge 775386. In the case of oblique, the NEAR boundary of the area to be photographed will be given. If GRID reference is used, state GRID type, i.e., UTM, GEOREF, etc., otherwise, state latitude and longitude to the nearest minute.
- P. PURPOSE OF REQUEST AND RESULTS DESIRED. It is important that the exact purpose of the request is stated, in order that the most satisfactory results may be produced.
- Q. PHOTOSCALE OR SCALE LIMITS ACCEPTABLE. Whenever possible, this heading should be filled in on the advice of a photographic interpreter. The scale should be quoted in figures, e.g., 1/10,000.
- R. NUMBER OF PRINTS, PLOTS OR REPORTS REQUIRED. This should never exceed the number actually required. If a photo interpretation report will suffice, prints should not be ordered.
- S. DELIVERY ADDRESS-DATE TIME. State clearly where the prints, plots or reports are to be delivered and the time and date on which they are required. If there is no haste, as much time as possible should be given for final delivery, so as to allow requests of a more urgent nature to be dealt with.
- T. LATEST ACCEPTABLE TIME-DATE: The date and/or time after which the prints, plots or reports are no longer required. If delivery cannot be made by the date stated, the request will be cancelled.
- U. PRIORITY. The relative importance of or need for the mission.
- V. SPECIAL INSTRUCTIONS. The degree of urgency, or when making more than one request, the degree of priority, and the security classification of the material requested. Note whether first, second or third phase photointerpretation is desired from the photographs. Give any instructions or information not already provided, that will aid the planning, or successful accomplishment of the mission.

Figure 41. Tactical air reconnaissance support form, reverse side.

Record of Missions

FSCC: _____

Period: _____ to _____

Tgt	Description	Location	Assigned to	Time fired From/To	Ammo	Results

Use

A record of all missions fired during a prescribed period. At the end of the period, it is closed out and filed as an annex to the fire support coordination center journal.

Figure 42. Record of missions.

FIRE SUPPORT COORDINATION CENTER NAVAL GUNFIRE MISSION REQUEST FORM

Warning order _____ (Circle one) _____ Fire mission

Identification of observer _____

Bearing (in mils) True, Grid, Mag (circle one) _____

Coordinates _____

Guns to fire _____ ; _____ (adj) _____ ; _____ (FFE) _____
(Cal) (Nr) (Cal) (Nr)

Control _____ (Circle one) _____ Will adjust

At my command, will adjust

will observe

At my command, will observe

Ship observe

Cannot observe

Fire for effect

Date/Time/Group received _____

Restrictive fire plan _____ (Circle one) _____ November,
(if applicable) _____ Whiskey, Victor

	<u>Approved</u>	<u>Disapproved</u>	<u>Date/Time/Group</u>
Naval gunfire officer	_____	_____	_____
Air officer	_____	_____	_____
Artillery officer	_____	_____	_____
Nuclear weapons employment staff officer	_____	_____	_____
FSCC coordinator	_____	_____	_____

Information passed to subordinate units (Naval gunfire officer _____
initial and Date/Time)

Pass to target information officer for entry into target card file.

Note. Appropriate forms may be designed for chemical, biological, and
radiological operations as directed by the unit SOP.

Figure 43. Naval gunfire mission request form.



APPENDIX VII

A GUIDE AND CHECKLIST FOR THE PREPARATION OF ARTILLERY STANDING OPERATING PROCEDURES

1. General

a. A standing operating procedure (SOP) is a set of instructions prescribing the methods to be followed by a particular unit in performing certain operations, both tactical and administrative, which the commander desires to make routine.

b. An SOP applies except when modified by order.

c. An SOP is used to supplement current Department of the Army field manuals, technical manuals, and other publications. It can be used to supplement material already covered and to give instructions and information not yet covered in available publications. It should be clear, concise, and complete. It is made concise by omitting all but the most important material already covered in available publications. It must be complete enough to give newly arrived individuals and attached units the information necessary for them to perform their duties or to accomplish their missions properly. A battalion SOP must conform to the standing operating procedures of higher headquarters. Only routine matters should be made SOP. An SOP should not include matters which are influenced by changing conditions. If a commander tries to make his unit SOP too inclusive, he sacrifices flexibility, his decisions become stereotyped, and he is apt to ignore other solutions. A written SOP may become too large for practical purposes. This is particularly true of tactical procedures, because an SOP which is adversely affected by changing conditions must be

changed frequently and, therefore, soon becomes of little worth. Instead of developing teamwork and understanding, a constantly changing SOP creates confusion and conflict.

d. Each unit SOP should have a table of contents listing subject material by section, paragraph, and page to enable individuals to find pertinent information quickly.

e. Each unit SOP should have annexes dealing with loading plans and communication diagrams. These annexes should be based on current tables of organization and equipment and the desires of the commander.

2. Guide for a Battalion SOP

The example shown in paragraph 4 of this appendix may be used as a guide and checklist for any officer designated to write a unit SOP. It purposely includes more detail than the normal artillery battalion SOP. This SOP is written for an infantry division artillery 105-mm howitzer battalion, towed. The information contained herein may be modified to meet the requirements of other types of battalion organization.

3. Guide for an Artillery Annex to a Corps SOP

The artillery annex to a corps SOP is published in the form that is most effective for the command. Regardless of the form, it is a combat order in its own right and is published by authority of the commander and carries the same weight as other orders. An example of an artillery annex is shown in paragraph 5.

4. Example of a Type Battalion SOP

(Classification)

Section I. GENERAL

1. REFERENCE AND RESCISSION

- a. Reference, artillery annex, SOP, 1st _____ Div, 10 Dec _____.
- b. Descission, SOP, 1st How Bn, 3d Arty, 2 Jan _____, is rescinded and will be destroyed.

2. PURPOSE

This SOP standardizes routine procedures; it applies to organic and attached units alike unless otherwise stated. The material presented herein is applicable without modification to both nuclear and nonnuclear warfare.

Section II. PERSONNEL

3. DISCIPLINE, LAW, AND ORDER

Personnel awaiting trial by special court-martial or lower court will be held with their units. Personnel of attached units will be held with their units; however, any action concerning special or summary courts-martial will be referred to their parent organization.

4. PRISONERS OF WAR (PW)

- a. S1 will coordinate evacuation of PW's to collecting point of supported brigade.
- b. Wounded PW's will be evacuated through medical channels.

5. GRAVES REGISTRATION

- a. Dead will be evacuated to division cemetery, if established, otherwise to division collecting points, and the parent organization will be notified.
- b. Isolated burials will not be permitted. Location of isolated graves will be reported to battalion.
- c. Personal effects will be properly identified, handled, and forwarded to parent battalion by 2000 hours daily.
- d. Civilian dead will be interred by local civilians in accordance with local customs. Identification report will be forwarded to division headquarters (G1).

6. MORALE AND PERSONNEL SERVICES

- a. Decorations and Awards.
 - (1) Recommendations will be submitted to battalion executive within 2 days of knowledge of action.
 - (2) All recommendations will be processed through parent organization to division review board.
 - (3) Presentation will be made without delay at appropriate troop formation whenever possible.
- b. Personnel Services.
 - (1) Units will pick up mail at battalion command post (CP).
 - (2) PX items, when available, will be distributed with rations.
 - (3) Rest and recreation quotas will be filled when combat conditions permit.
 - (4) Emergency leaves will be processed through division AG.

(Classification)

(Classification)

7. PERSONNEL PROCEDURES

- a. Recommendations for battlefield promotions (officers) will be sent to division headquarters (through parent organization).
- b. Personnel receiving battlefield promotions will remain with their own units.

8. REPORTS

- a. Units will report to division artillery daily as of 1800 hours by 2000 hours.
- b. Command report (original) will be forwarded to division artillery as of last day of month by 10th of following month.

Section III. INTELLIGENCE

9. OBSERVATION

- a. Responsibilities. As prescribed in assigned tactical mission.
- b. Artillery Observation Posts (OP).
 - (1) Functions: Adjust artillery fire, observe fires and report information.
 - (2) Communication: By battalion as directed.
 - (3) Location: As requested by supported unit or as directed by battalion S2.
- c. S2 Staff Responsibilities.
 - (1) Establish artillery OP's as necessary.
 - (2) Brief observers and liaison officers before departure from own unit to include—
 - (a) Situation, location of supported unit, location of friendly units.
 - (b) Index points.
 - (c) Necessary codes and ciphers.
 - (d) Assignment of zones of observation and primary areas of responsibility within each zone.
 - (3) Supervise own observers and coordinate their activities with those of supported unit.
 - (4) Maneuver own observation agencies.
 - (5) Request and coordinate requests for additional observation agencies (air observation, radar, sound and flash, etc.).
 - (6) Supervise and coordinate employment of battalion countermortar radar.
- d. Observer Procedures.
 - (1) Report for briefing to S2, S3, and communication officer prior to departure.
 - (2) Remove all security material from personnel and vehicles.
 - (3) Establish OP to cover assigned zone of observation.
 - (4) Establish communication and report location of OP.
 - (5) Prepare terrain sketch (FO's) and submit if situation permits.
 - (6) Prepare visibility diagram (FO's) and submit if situation permits.
 - (7) Organize personnel for continuous operation. Orient instruments for night operation.
 - (8) Select alternate OP.
 - (9) Send fire missions to the appropriate fire direction officer.
 - (10) Reports.
 - (a) Information reports to battalion headquarters or appropriate headquarters as directed.
 - (b) Periodic report hourly to battalion headquarters or appropriate headquarters as directed. (Negative reports required.)

(Classification)

(Classification)

e. Air Observation.

- (1) Request for aerial observation to division artillery S2 to supplement ground observation.
- (2) Disposition and employment of aerial observers (augmentation) as directed by division artillery.

f. Radar.

- (1) Battalion furnishes communication, security, logistics and survey to division artillery radar section when necessary.
- (2) Battalion countermortar radar will be employed under the supervision of the battalion S2.

g. Shelling Reports.

- (1) Form: See annex A.
- (2) Procedure: From locating agency to battalion S2 to division artillery by fastest means available.
- (3) Shelling report teams:
 - (a) FO sections.
 - (b) Liaison sections.
 - (c) Survey sections.
 - (d) Two 2-man teams per battery.

10. AIR DEFENSE WARNING

- a. Procedure. Warnings received over division warning net.
- b. Air Defense Warnings are:
 - (1) Red—air attack imminent.
 - (2) Yellow—air attack probable.
 - (3) White—all clear.

11. REPORTS

S2 submit necessary intelligence data for unit and command reports to battalion executive officer.

Section IV. OPERATIONS

12. TACTICAL MISSIONS

- a. General. See Annex E.
- b. Forward Observers.
 - (1) Furnished in accordance with tactical mission assigned battalion.
 - (2) Functions:
 - (a) Adjust artillery fire in zone of supported unit as requested by supported unit.
 - (b) Advise supported unit commander on artillery matters.
 - (c) Report information.
 - (d) Maintain communication with supported unit and own artillery unit.

13. FIRE DIRECTION

- a. Firing Charts.
 - (1) Horizontal and vertical control charts at battalion; firing batteries maintain horizontal control chart.

(Classification)

(Classification)

- (2) Coordinates and altitude of registration point for grid sheet observed firing chart, 3000060000 and 300 respectively.
 - (3) Battalion and battery fire direction centers exchange information necessary to keep firing charts current and complete.
 - b. Fire Capabilities. S3 to division artillery. Report coordinates and direction of fire for each battery as soon as available.
 - c. No-Fire Line. Responsibility of direct support battalion commander. Submitted to division artillery. The no-fire will be kept current on all firing charts. Battalion S3 will keep firing batteries informed on latest information concerning no-fire line. The battalion S3 will keep firing batteries current on the following information.
 - (1) Accurate location of forward friendly troops as reported by observers and liaison officers.
 - (2) Plan of maneuver.
 - (3) Patrol activity.
 - d. Control of Fire Direction. Requests for fire are transmitted to battalion FDC. Battalion FDC maintains centralized control of battery FDC's. Control is decentralized to battery FDC's only when desirable or necessary.
 - e. Artillery Fire Plans. Battalion will prepare an artillery fire plan integrating mortar platoon fires.
 - f. Concentration Designation. Concentrations will be designated in accordance with current directives; see artillery annex, SOP, 1st _____ Division.
 - g. Artillery Barrages.
 - (1) Direct support: The barrage of each battery will be provided the supported unit.
 - (2) Reinforcing: As requested by reinforced unit.
 - (3) General support: As directed by higher headquarters.
 - (4) General support-reinforcing: As directed by higher headquarters.
 - h. Additional Massed Fire Procedure.
 - (1) Code name is announced periodically by corps artillery.
 - (2) Mortar platoon FDC requests additional fire from battalion FDC including coordinates, altitude, and nature of target.
 - (3) Division artillery rebroadcasts. All available division artillery will fire.
 - i. Maximum Rates of Fire from FM 6-40.
 - j. Fire Support Coordination. See appendix 4, artillery annex, SOP, 1st _____ Div.

14. SURVEY

Position area, target area, and connection survey as required. Locate SCP for mortar platoon. Locate countermortar radar if appropriate.

15. MARCHES

- a. Quarters parties:
 - (1) Report to vicinity of message center.
 - (2) Vehicles—one 1/4-ton vehicle for each battery.
 - (3) Personnel—one officer, one NCO, and two enlisted men (including driver).
- b. Movement order by S3 to include—
 - (1) Start point (SP).

(Classification)

(Classification)

- (2) Start point time.
- (3) Order of march.
- (4) Rate of march.
- (5) March units.
- (6) March unit commanders.
- (7) March interval.
- (8) Route.
- (9) Halts.
- (10) Route markers.
- (11) Release point and release point time.

c. March discipline:

- (1) Only 1/4-ton vehicles are permitted to double column.
- (2) Each battery will designate a pace-setting vehicle.
- (3) Radio communication is maintained between head and tail vehicles in each march unit and between each march unit and battalion CO.

d. Halts:

- (1) Scheduled. All personnel, except drivers and assistant drivers and those manning mounted automatic weapons, will dismount and disperse. Drivers and assistant drivers will perform vehicle inspection and service.
- (2) Nonscheduled. Battery commander or representative proceeds forward, determines cause for the halt, and takes appropriate action to continue the march.

e. Maintenance: Each driver inspects and services vehicle at all authorized halts.

f. Vehicle breakdown.

- (1) Two men dismount and direct traffic around stalled vehicle.
- (2) All vehicles pass except march maintenance vehicle.
- (3) March unit maintenance personnel start repair of vehicle pending arrival of battalion maintenance personnel.
- (4) Further action will be as directed by battalion motor officer.
- (5) Vehicle will regain place in column only after column halts.

16. RECONNAISSANCE, SELECTION, AND OCCUPATION OF POSITION

a. Reconnaissance Parties. Complete:

<u>Staff</u>	<u>Hq btry</u>	<u>How btry</u>
CO	Btry comd	Btry comd
Comm off	Wire 1	Firing btry hq
Sv off		Wire 2
S2		

b. Procedure.

- (1) When vehicles are limited to less than number shown in a above, they will be eliminated from the bottom of list. Exception for the how btry—when a one vehicle party is directed the firing battery headquarters vehicle will be taken.
- (2) Assemble vehicles in vicinity of message center unless otherwise directed.

(Classification)

(Classification)

c. Occupation of Position.

- (1) Laying. Pieces are laid with tubes within 10 mils of center of traverse. Aiming posts are put out at a common deflection—2,600 mils for towed howitzers; 800 mils for self-propelled howitzers.
- (2) Boresighting. Boresighting is accomplished immediately upon occupying position and once daily in static position.
- (3) Ammunition. Unless otherwise specified, the following ammunition is at each piece.

40 rd HE
5 rd HEAT
5 rd HC
5 rd WP
5 rd colored smoke
Total 60 rd

- (4) Executive officer report. Immediately after battery is laid, to include direction, minimum elevation, and distribution, be prepared to report, when called for ammunition, powder temperature, and lateral limits.
 - (5) After registration. Measure adjusted azimuth and/or orienting angle.
- d. Organization of Position.

(1) Priorities.

- (a) Prepare to deliver fire.
 - (b) Protection of personnel (foxholes, dig-in).
 - (c) Preparation of security installations and camouflage of pieces, vehicles, etc. Camouflage concurrent with other work to maximum extent practicable.
 - (d) Protection of ammunition.
 - (e) Preparation of emplacements for howitzers and section equipment.
 - (f) Preparation of direct fire positions.
 - (g) Preparation of protective minefields and barbed wire.
 - (h) Preparation of alternate and dummy positions.
- (2) Alternate positions. Location is selected and reported by BC at earliest opportunity. Positions are organized as completely as time permits to include survey, wire communication, and emplacement of howitzers, personnel, and equipment.
 - (3) Dummy positions. Dummy positions are established only on authority of higher headquarters.
 - (4) Defense. Battery security officer reports completion of organization of battery defense and submits sketch of battery defense to battalion executive officer.

e. Displacement. Headquarters and Headquarters Battery: When battalion displaces forward by echelon, the first echelon of headquarters and headquarters battery displaces with first howitzer battery; second echelon displaced whenever forward CP has communications and has assumed control and one-half or two-thirds of the battalion has displaced.

(1) First echelon.

- (a) Communication officer.
- (b) S2.
- (c) Reconnaissance and survey officer.
- (d) Instrument and survey.
- (e) S3.

(Classification)

(Classification)

- (f) Hq battery commander.
- (g) Wire 1, 2, 3.
- (h) Message center.
- (i) Radio 1.
- (2) Second echelon.
 - (a) Bn executive officer.
 - (b) Assistant S3.
 - (c) CP truck.
 - (d) Btry hq.
 - (e) Wire 4.
 - (f) Radio 2.
 - (g) Kitchen.
 - (h) Supply.
 - (i) Motor maintenance.
- (3) Service element. Train agent moves with first echelon of headquarters and headquarters battery.

17. SECURITY

a. Organization of Personnel.

- (1) S2 determines alert status and rebroadcasts warning.
- (2) Battalion executive officer is designated battalion security officer.
- (3) Each battery will designate an officer as battery security officer.
- (4) Battery security platoon composition and equipment: 25 EM (including 1 sgt), 1 officer, and individual weapons.
 - 2 hand grenades per man.
 - 2 rocket launchers.

b. Security Procedure.

- (1) Coordination: Preliminary coordination is accomplished between adjacent units pending final coordination by battalion security officer.
- (2) Signals:
 - (a) Ground or airborne attack—two short blasts on horn or whistle or two rounds fired from small arms.
 - (b) Air attack—three short blasts on horn or whistle or three rounds fired from small arms.
 - (c) CBR attack—striking a sound-producing object (shellcase, iron triangle) repeatedly, four short blasts on horn or four rounds fired from small arms.
 - (d) All clear—continuous blast on horn or whistle.
- (3) Outpost reports: Day—hourly (negative report required). Night—every 15 minutes (negative report required).
- (4) Authority to cease primary mission to defend position against attack is delegated to senior person present. Immediate report of such action is made to battalion.
- (5) Local counterattacks are limited to action necessary to restore position.
- (6) Displacement to alternate position is made only on authority from battalion.
- (7) Primary weapons: Primary zone of responsibility is assigned each howitzer. If howitzer is directed to fire outside zone, responsibility for observation in assigned zone remains. Range cards are prepared by each section.

(Classification)

(Classification)

(8) Report of defensive plan. Sketch of primary and alternate positions, to scale, are given to battalion security officer showing location of primary and auxiliary weapons, zone of fire for each weapon, location of sentinels, outpost, and direct fire positions.

(9) Materiel will be destroyed before it is abandoned.

(10) For CBR defense, see annex F.

c. Security on the March.

(1) Air and ground sentinels will be in each vehicle.

(2) All automatic weapons will be manned.

18. AVIATION

a. Air OP's. Air observation will be requested from division artillery.

b. Airfields.

(1) When suitable terrain is available, establish an airfield in the vicinity of battalion.

(2) Installation and marking is the responsibility of the headquarters battery commander in accordance with procedures established by higher headquarters.

c. Heliport.

(1) Location of the heliport will be recommended by the communication officer with advice of helicopter pilots supporting the unit.

(2) Installation and marking is the responsibility of the communication officer in accordance with procedures established by higher headquarters.

19. REPORTS

S3 will submit data for unit and command reports to battalion executive officer.

Section V. LOGISTICS

20. CLASS I SUPPLIES

a. Batteries pick up rations daily at battalion ration breakdown.

b. Each battery draws water from water supply points (WSP). S4 informs batteries of location of WSP.

c. Three emergency rations are in reserve in each battery. Battery commander has authority to issue.

d. Additional emergency rations are in following vehicles:

(1) FO vehicles—three rations.

(2) CO vehicle—one ration.

(3) Recon vehicle—one ration.

(4) Ammo tn vehicle—one ration.

21. CLASS II AND IV SUPPLIES

a. Loss or damage of major items will be reported immediately to S4.

b. Routine supply is based on normal requirement.

22. CLASS III SUPPLIES

Service element will deliver class III supplies to battery positions.

23. CLASS V SUPPLIES

a. Normal. Firing battery ammunition sections operate under control of battalion ammunition train.

(Classification)

(Classification)

b. Emergency. Battery ammunition sections will be prepared to operate independently.

c. Basic load distribution.

(1) Ea prime mover	60
(2) Btry ammo trucks and trailers	360
(3) Total in how btry	720
(4) Total in bn ammo tn	480
(5) Basic load	1,200

24. SALVAGE

Each battery will collect surplus, salvage, and enemy material and will establish dump in a convenient location. Salvage is evacuated by service element through normal channels.

25. EVACUATION AND HOSPITALIZATION

a. One aid man from battalion medical section attached to each firing battery.

b. Aid station is in the vicinity of the CP.

c. Wounded or sick personnel are evacuated to battalion aid station, coordinated by battery: further evacuation to division clearing station will be by battalion medical section.

d. FO and liaison wounded or sick personnel are evacuated through channels of the supported unit.

26. SANITATION

See Medical Annex, SOP, 1st _____ Div.

27. REPORTS

S4 will submit data for unit and command report to the battalion executive officer.

28. WIRE COMMUNICATION

a. Wire system (bn), annex G.

b. Wire system (105-mm how btry), annex H.

c. Line route map is an overlay. Batteries submit one copy to battalion; communication officer submits consolidated battalion copy to division artillery.

d. Changes to line route map same as c above.

e. Circuits installed by headquarters battery in order of priority:

(1) To supported unit command switchboard.

(2) To liaison officers with maneuver elements.

(3) To countermortar radar and to division artillery surveillance radar (when attached).
May be laid to the nearest battery.

(4) To area communication center.

(5) Two circuits between battalion operations and battalion command switchboards.

(6) Local circuits as required.

(7) Trunk circuit to service battery. (May be over area communication system.)

(8) Adjacent battalions as directed.

f. Circuits installed by liaison officers and forward observers in order of priority: (May be assisted by communication platoon when required.)

(1) To liaison officers switchboard from each forward observer and from each forward observer to supported company.

(Classification)

(Classification)

- (2) To maneuver element switchboard from liaison officers switchboard.
- (3) To liaison officers telephone at Brigade from Brigade switchboard.
- g. Installation by howitzer battery in order of priority :
 - (1) To battalion FDC from battery FDC.
 - (2) From battalion command switchboard to battery command switchboard.
 - (3) To battery FDC from howitzers.
 - (4) Locals as required.

29. RADIO COMMUNICATION

- a. Radio net (bn), annex J.
- b. Radio net (155-mm how btry), annex K.
- c. Explanation of nets :
 - (1) Battalion command and fire direction nets, FM: Short title, "CF." Voice net for command and intelligence and fire direction.
 - (2) Three battalion fire direction nets, FM; Short titles, F1, F2, and F3. Voice net for fire control and direction.
- d. Restrictions on radio transmission :
 - (1) Copy, cover, guard, and listening watch: Transmitters off, receivers continue to monitor assigned frequency.
 - (2) Radio silence: All receivers and transmitters off.
 - (3) Emergency silence: Observe conditions of guard.
- e. Displacements (hq and 105-mm how btry) :
 - (1) Movement of displacing echelon: Battalion "CF."
 - (2) Registration in forward area: As directed by the S3 or his representative.
 - (3) Remaining echelon in rear: Normal.
 - (4) Movement of remaining echelon: Battalion "CF."
 - (5) After battalion closes in forward area: Normal.
- f. Displacements (remainder of battalion) : Own "CF."

30. MESSAGE CENTER

- a. All message traffic processed through message center (exceptions: tactical messages or messages transmitted in clear text or encoded in the prearranged message code for delivery within the battalion) will include—
 - (1) Encryption.
 - (2) Decryption.
 - (3) Authentication.
 - (4) Logging.
 - (5) Delivery.
- b. Message center will maintain a record of status of both radio and wire or any other means of communication available.
- c. Message center must be aware of exact locations of all battalion installations. Be prepared to guide visitors.
- d. Battalion messenger is at division artillery except during displacement of battalion; he accompanies battalion during displacement.

(Classification)

(Classification)

31. COMMUNICATIONS SECURITY

a. Messages will be transmitted in clear text only when enemy does not have time to act upon information and when time is not available for encryption; both conditions must exist.

b. Communication violations and compromises will be reported to the communication officer immediately.

c. All transmissions and messages will be authenticated unless otherwise directed. Exceptions are nonnuclear fire missions.

32. SIGNAL SUPPLY AND MAINTENANCE

See section VI, logistics, and annex J.

33. COMMAND POST

a. Locations. S3 reports movement and location to division artillery.

b. Selection of Location for Installation.

(1) Communication officer (coordinating with headquarters battery commander) locates headquarters, FDC, message center, switchboard, radiopanel station, and heliport.

(2) Headquarters battery commander selects all other locations.

BROWN

Lt Col

Annexes: A—Artillery Counterfire Information Form

B—Loading Plan, Hq and Hq (omitted).

C—Loading Plan, Firing Btry (105-mm How) (omitted).

D—Tactical Missions.

E—CBR Defense.

F—Battalion Wire System (omitted).

G—Battery Wire System (105-mm How) (omitted).

H—Battalion Radio Net (omitted).

I—Battery Radio Net (105-mm How) (omitted).

J—Signal Maintenance.

OFFICIAL:

/s/ Griswold

GRISWOLD

S3

(Classification)

(Classification)

ANNEX A (ARTILLERY COUNTERFIRE INFORMATION FORM) TO SOP
See artillery counterfire information form, as shown in FM 6-121.

(Classification)

(Classification)

ANNEX D (TACTICAL MISSIONS) TO SOP
(Tactical missions as shown in FM 6-20-1 should be reproduced here.)

(Classification)

(Classification)

ANNEX E (CBR DEFENSE) TO SOP

1. GENERAL

a. Purpose. To effect maximum utilization of personnel and facilities, including military organization for CBR defense within the existing organization of this command.

b. Definition. CBR is defined as chemical, biological, and radiological warfare.

2. ORGANIZATION

a. CBR defense officers and noncommissioned officers in batteries of this battalion will act as advisers on defensive aspects of CBR attacks.

b. Radiological monitoring and decontamination teams will be provided as prescribed in FM 21-40.

c. The CO of this battalion will be notified immediately of all CBR attacks.

3. DUTIES AND RESPONSIBILITIES

In addition to normally assigned duties and/or supervisory responsibilities, the following responsibilities will apply for CBR defense:

a. Individual. All individuals are responsible for—

- (1) Sounding the alarm if CBR agents are detected.
- (2) Employment of proper protective measures in case of attack.
- (3) Assistance to others in the immediate vicinity during and immediately after a CBR attack.
- (4) Self-aid and first aid procedures.

b. Unit. Unit commanders are responsible for—

- (1) Adequate training in CBR defense.
- (2) Periodic inspection of all individual CBR protective equipment.
- (3) Establishment and training of specialist teams as required.
- (4) Frequent training in simulated CBR attacks.
- (5) Seeing that all personnel mask without command or CBR alarm when the following are placed directly on their positions:
 - (a) Artillery concentrations (rocket and mortars).
 - (b) Aircraft bombs.
 - (c) Aircraft spray.
 - (d) Enemy smoke.
- (6) Seeing that all personnel remain masked until told to unmask by the senior officer or noncommissioned officer present.

4. OPERATIONS

In the event of CBR attack, these procedures will be followed:

a. Prior to the attack, while the general alert is in effect, the unit will continue to carry out its mission.

b. Regular guards and sentries will be supplemented with trained CBR sentries.

c. Protective masks will be carried by all personnel at all times.

d. On hearing the alarms, all personnel will seek nearest cover.

5. LOGISTICS

a. The quartermaster will be responsible for storage and issue of protective clothing.

(Classification)

(Classification)

b. The signal officer will be responsible for storage, issue, and maintenance of radiac instruments, to include calibration, with the assistance of the chemical officer.

6. COMMAND

Commanders at all levels will take immediate, effective, and aggressive action to carry out the provisions herein to insure continuance of the mission in event of CBR attack.

ANNEX J (SIGNAL MAINTENANCE) TO SOP

1. MAINTENANCE

- a. First echelon maintenance is performed daily.
- b. Weekly first echelon maintenance will be completed and entries made on appropriate maintenance checklists.
- c. Second echelon inspections are completed at least once a month; latest checklist will be used.
- d. Record of operations will be maintained for power reels and generators.
- e. After second echelon inspections are completed, daily and weekly check sheets will be destroyed.
- f. Record of monthly inspections will be retained until replaced by a later check sheet.

2. REPAIR

- a. First echelon maintenance will be performed on all signal items, before being sent to battalion for repair. First echelon maintenance forms will accompany the item.
- b. Items to be repaired will bear a tag listing organization, designation, and the maintenance required.
- c. Battalion communication section will repair items if possible. If higher echelon repair is indicated, unit will prepare necessary work orders and process through battalion S4.
- d. Records of operation and maintenance forms will accompany power reels and generators evacuated for repair.
- e. Signal equipment turned in for repair will be properly protected en route to prevent damage to the equipment. Radio sets will not be transported in trailers.

(Classification)

5. Example of a Type Artillery Annex to a Corps SOP

(Classification)

Copy No. 6 of 26 copies
 1st Corps
 FORT SILL, OKLAHOMA
 15 March _____

ANNEX B (1st CORPS ARTILLERY SOP) TO SOP, 1st CORPS

Section I. GENERAL

1. REFERENCE

SOP 1st Corps.

2. APPLICABILITY

Artillery with 1st Corps.

3. PURPOSE

This SOP standardizes normal procedures; it applies unless otherwise stated.

4. UNIT PROCEDURE

Subordinate unit issues SOP to conform.

5. DEFINITIONS

- a. Field artillery—All units assigned a field artillery tactical mission.
- b. Available artillery—All artillery except that engaged in firing a close support mission.
- c. Close support mission—A fire mission requested by or delivered for a unit on target that may immediately affect the supported unit.

Section II. PERSONNEL AND ADMINISTRATION

(As a matter of convenience for subordinate units, corps artillery might extract items from corps SOP relative to replacements, decorations, awards, leaves, promotions, reports, morale activities, and other pertinent subjects.)

Section III. INTELLIGENCE

6. OBSERVATION

0-0 line prescribed when appropriate by corps artillery.

a. Ground OP.

- (1) Initially, minimum of one per corps FA battalion.
- (2) Area of responsibility, initially, is same as zone of fire.

b. Air (par. 16).

7. CONDITION OF AIR RAID WARNING

As announced by Air Force (par. 16).

8. REPORTS

a. Visibility.

- (1) Visibility reports will indicate—
 - (a) Location of observation posts.

(Classification)

(Classification)

- (b) Primary area of responsibility.
- (c) Other designated areas of responsibility.
- (d) Dead space.
- (e) Area within limits of effective observation.
- (2) All OP's submit report by telephone or radio immediately on occupancy.
- (3) Submit visibility diagram as soon as practicable.
- b. Shelling report.
 - (1) Submit promptly by fastest means.
 - (2) Forward fragments by fastest means.
 - (3) Send reports and fragments through artillery channels to corps artillery.
 - (4) Areas of responsibility as established in corps standing operations procedure.
- c. Tactical employment of nuclear weapons. (Extract from corps SOP for emphasis.) By fastest practicable means forward information indicating enemy capabilities for tactical employment of nuclear weapons, such as:
 - (1) Withdrawal of enemy frontline units.
 - (2) Security detachment protecting movement of materiel.
 - (3) Location of enemy weapons capable of delivering nuclear missiles, projectiles, or bombs.
 - (4) Enemy training in nuclear warfare.

Section IV. OPERATIONS

9. FIRE CAPABILITIES

- a. Division artillery.
 - (1) Report to corps artillery immediately the grid reference and azimuth of center of zone of fire of all cannon batteries.
 - (2) Report the grid reference of firing position of missile battery.
 - (3) When practicable, follow initial report with fire capabilities overlay indicating—
 - (a) Grid reference of each cannon battery and each firing position for missile battery.
 - (b) Minimum and maximum range of each cannon battery.
 - (c) Lateral limits of each cannon battery.
 - (d) Areas in which specific units cannot fire.
- b. Corps artillery battalions.
 - (1) Report immediately through artillery channels to corps artillery the grid reference and azimuth of center of zone of fire of each cannon battery and firing positions of each missile battery.
 - (2) When practicable, follow initial report with fire capabilities overlay indicating for each battery the information in a(3) above.

10. CONCENTRATION AND TARGET DESIGNATION

- a. General. The following concentration and target designation (Target Reference) system is established to designate all types of confirmed and suspect locations, targets, or concentrations.
- b. Corps. All concentration designations will consist of two elements: letters and numbers. The corps artillery may assign the letters of concentrations to major subordinate artillery headquarters within the corps. Major subordinate artillery headquarters may assign an additional letter to each subelement. In no instance will the letter "N" be used as the first letter of a target designation ((2) below).

(Classification)

(Classification)

(1) An example of the alphabetical designations within the 1st Corps is as follows:

<u>Unit</u>	<u>Letter(s)</u>
1st Corps Arty -----	X
1st ----- Div Arty -----	Z
2d ----- Div Arty -----	B
3d ----- Div Arty -----	C
4th ----- Div Arty -----	D
Organic or Attached Artillery with ----- Armd Cav Regt -----	E
Artillery groups or corps artillery -----	XA to XE
Attached units, or as desired -----	XF, G, etc.

(2) Nuclear targets. Each nuclear concentration designation uses "N" as its first letter, followed by the letters indicated in d(1) above which identifies the planning headquarters. Targets will then be numbered consecutively, e.g., concentration "NB3" is the third nuclear concentration planned by the 2d Div. Concentration "NX4" is the fourth nuclear concentration planned by corps.

e. Infantry mechanized and armored divisions.

(1) Within these divisions, a letter, for use as the *second* letter of its designation, may be assigned to each subordinate artillery element; e.g.:

<u>Unit</u>	<u>Second Letter</u>
Supporting weapons organic to major maneuver elements -----	A through E
Division Artillery FDC -----	F
Artillery Battalions in numerical order -----	G through M
Attached Artillery, or as desired (The letters I and O will not be used.) -----	N, P, etc.

(2) The numerical elements of concentration planned by the major combat element FSCC (LO's) and by the artillery and mortar FO's with the infantry companies will be assigned by the supporting artillery or organic FDC. Targets of opportunity, as well as those concentrations planned by the FDC, will also be assigned numbers by the fire direction center.

f. Airborne Divisions. Designation of concentrations within airborne divisions is similar to that of the division in e above.

11. LOCATION OF SUPPORTED UNITS

a. Corps artillery.

(1) Direct support battalion. Report immediately to next higher artillery headquarters all changes in location of supported unit including planned and actual patrol activity.

(2) All other artillery units and artillery headquarters. Report to next higher headquarters any changes observed.

(3) Corps artillery army aviation officer. Report to corps artillery any changes observed.

b. Division artillery. Report all changes in location of supported unit, including planned and actual patrol activity, to corps artillery, subordinate units, and adjacent units.

c. No-fire line (NFL).

(1) Direct support battalion:

(a) The NFL will be designated by the direct support battalion in coordination with the supported combat element.

(b) Change to NFL will be reported immediately to next higher artillery headquarters.

(Classification)

(Classification)

- (2) All artillery units obtain clearance from appropriate direct support battalion prior to firing short of the no-fire line.
- (3) Corps artillery and division artillery coordinate NFL as required and distribute the location and changes to higher, lower, and adjacent units.

12. FIRE MISSIONS

- a. General. When practicable, a surveyed firing chart will be used by all artillery units.
- b. Execution.
 - (1) When an artillery headquarters receives two or more fire missions simultaneously, fire will be delivered first on that target or targets considered most important.
 - (2) A close support mission usually will be given priority.
 - (3) Unless otherwise engaged, artillery units will respond to appropriate fire requests from supported units regardless of tactical mission.
- c. Emergency massed fires.
 - (1) Request over corps artillery F and DF nets. Transmit after "fire mission" the code word (par. 29) for such fires.
 - (2) Corps artillery will publish periodically a code word for emergency massed fires.
 - (3) All artillery units will fire this mission if it is within their capabilities.
 - (4) One volley will be fired unless otherwise specified.
 - (5) Units will report execution of mission to the next higher headquarters.

13. FIRE PLANNING

- a. General. The corps artillery fire plan will be based on—
 - (1) The announced policies of the corps commander.
 - (2) The corps fire support plan.
- b. Coordination. Fire plans will be forwarded to the next higher artillery headquarters for coordination. Coordination will be effected throughout operations as required and by the fastest means.

14. SECURITY

- a. Groups coordinate security of subordinate units.
- b. Groups and separate artillery unit plans will provide for protection and security of perimeters, march columns, and convoys.

15. REGISTRATION

- a. As soon as possible, unless otherwise directed.
- b. Corps artillery units report location of registration point and time of registration to corps artillery fire support element.
- c. Preparation will be made for high-burst registration.

16. AIR DEFENSE WARNING

Air defense warning will be transmitted over specified warning channels. The air defense raid warnings are indicated by a color code name:

- a. Red—air attack imminent.
- b. Yellow—air attack probable.
- c. White—all clear.

(Classification)

(Classification)

17. TARGET ACQUISITION BATTALION

- a. The target acquisition will establish a survey information center (SIC) in the vicinity of the corps artillery fire support element.
- b. Subordinate units coordinate survey plans with SIC.
- c. Schedule of net messages will be announced by corps artillery.

18. FIELD ARTILLERY SEARCHLIGHT BATTERY

See paragraph _____, corps standing operating procedures.

- a. Employment of searchlight illumination as directed by corps commander.
- b. Searchlight battlefield illumination will be coordinated by S2, corps artillery.

19. FIRE SUPPORT COORDINATION

Note. Since fire support coordination is of interest to units other than artillery, this paragraph is extracted from the corps SOP and included in the artillery annex for emphasis.

- a. References: FM 6-20-1, and FM 101-5.
- b. Safety procedures:
 - (1) Fire support coordination line:
 - (a) Division submits recommended fire support coordination line location to corps fire support element.
 - (b) Corps FSE coordinates fire support coordination lines recommended by divisions and forwards recommended fire support coordination line to the army fire support element.
 - (2) When ordered, one of the plans given below will be placed in effect or a flak suppression program may be directed.
 - (a) Code words. Corps signal operating instructions.
 - (b) Plan Whiskey. No trajectory will cross or come within a specified distance either side of a line defined by two grid references. The distance either side of the defined line will be 500 meters unless specified in the transmission of the plan. For example, "Execute Plan Whiskey, target area 5135 to 5237, time 1020 to 1040." On receipt of this order, all fire will be suspended over this area (500 meters either side of a line from grid reference 5135 to grid reference 5237) from 1020 to 1040 hours. If a wider area is required, the order may be "Execute Plan Whiskey, target area 5135 to 5237, distance 1,000 meters, time 1020 to 1040."
 - (c) Plan Victor. No trajectory with a maximum ordinate of 1,100 feet will pass over or into an area defined by a circle. The radius of which will, unless otherwise specified, be 2,500 meters. This plan may be used when planes fly no lower than 1,500 feet. The order to implement this plan is similar to (b) above; for example, "Execute Plan Victor target area 5133, time 1020 to 1040."
 - (d) Plan November. No trajectory other than small arms, will pass over or into an area defined by a circle of a stipulated radius. The radius of which will, unless otherwise specified, be 2,500 meters. This plan may be used when planes operate at very low altitude. It is the same as Plan Victor except the ordinate of the support fire is not considered. All fire is suspended. The size of the area may be changed by specifying a radius other than 2,500 meters. The order to implement this plan is announced as in (c) above.
- c. Fire support planning and fire support plans: see FM 6-20-1 and FM 6-20-2.
- d. Fire planning and fire plans: See FM 6-20-1.

(Classification)

(Classification)

20. GENERAL

Conform to paragraph _____, Logistics, SOP, 1st Corps.

21. AMMUNITION

Corps artillery informs subordinate units of available supply rate.

22. EVACUATION

Units directed to nearest clearing station.

23. SERVICES

Subordinate units inform corps artillery of service requests.

24. MAINTENANCE

Conform to paragraph _____, Logistics, SOP, 1st Corps.

25. CALIBRATION PROCEDURE FOR ARTILLERY

See paragraph _____, Logistics, SOP, 1st Corps.

26. REPORTS

a. Ammunition report. Report amounts of ammunition in excess of basic load every 24 hours as of 24 hours.

b. Equipment shortage report. Conform with paragraph _____, Logistics, SOP, 1st Corps.

c. Unit equipment status report. Conform with paragraph _____, Logistics, SOP, 1st Corps.

Section VI. COMMAND

27. COMMAND POSTS

Report movement and location to corps artillery.

28. LIAISON

a. Corps artillery maintains liaison with—

(1) Corps headquarters.

(2) Artillery headquarters of the adjacent corps on the right.

(3) Each division artillery headquarters with the corps.

(4) Air reconnaissance support battalion or elements at appropriate reconnaissance air-field.

(5) Separate corps task force.

b. Division artillery maintains liaison with adjacent division artillery headquarters on the right.

29. COMMUNICATION

a. General. Conform to corps SOI and SSI. All communication officers extract information as necessary and as authorized.

b. Radio nets. As described in FM 6-10 and FM 44-series.

(Classification)

(Classification)

c. Wire system.

(1) General:

- (a) Wire system parallels established radio net.
- (b) Install wire at the earliest time to permit transfer of communication load from radio to wire.
- (c) Reconnaissance parties will include appropriate wire vehicles.
- (d) Maximum utilization will be made of area communication systems.
- (2) Corps artillery installs wire circuits, including simplex circuit, to the following units:
 - (a) Target acquisition battalion (including a duplicate circuit).
 - (b) Division artillery (including a duplicate circuit).
 - (c) Group headquarters.
 - (d) Separate battalions operating directly under corps artillery control.
 - (e) Artillery searchlight battery.
- (3) Priority of installation of trunk circuits by groups is as follows:
 - (a) Battalions of the group.
 - (b) Reinforced artillery headquarters.
- (4) Security.
 - (a) Telephone messages of a directive nature will be authenticated.
 - (b) Evidence of wire cutting or tapping will be reported immediately.
- (5) Wire nets for corps artillery units are described in FM 6-10.

d. Corps artillery fire direction and command and fire direction nets (F and CF).

- (1) Corps artillery fire directions center acts as net control station (NCS). See SOI for call signs.
- (2) Battalions directly under the control of corps artillery will operate in corps artillery radio nets as shown in FM 6-10.
- (3) Additional fire support may be requested by division artillery or group.
 - (a) Requests will include previously designated code words. If selected battalions are desired, each battalion is designated by its call sign in the transmission.
 - (b) Procedure for requesting additional fires: (Net call sign) THIS IS (division artillery or group call sign) (code word).

FIRE MISSION

GRID REFERENCE__ALTITUDE

DESIGNATION OF TARGET_____VOLLEYS

(Omit if one battalion volley is desired.) TOT (when ready).

- (c) If the corps artillery approves the request, it will rebroadcast on the F or CF net or both nets. If mission is TOT, the following will be added at the end of the transmission:

WHEN I SAY TIME, IT WILL BE EXACTLY _____ MINUTES UNTIL TIME
ON TARGET _____ 10 SECONDS, 5, 4, 3, 2, 1, TIME. IT IS EXACTLY _____
MINUTES UNTIL TIME ON TARGET. OUT.

- (d) Rebroadcast by corps artillery constitutes a check and is the order to fire.

BURK
Brig. Gen.

OFFICIAL:

/s/ Smith
SMITH
G3

(Classification)



INDEX

	Paragraphs	Page		Paragraphs	Page
Airborne operations, general.....	171	84	Control:		
Airfields and heliports.....	81	42	Supporting friendly guerrillas....	162	80
Air fire plan.....	app. III	97	Mountain operations.....	141	75
Airmobile movements:			Coordination of fire support.....	106-123	57-64
General.....	168	82	Corps:		
Planning.....	170	83	Artillery annex.....	app. VII	133
Ammunition in jungle operations.....	151	77	Artillery fire support plan.....	app. II	89
Amphibious operations.....	128-133	67	Standing operating procedures... app. VII		133
Antiguerrillas, support.....	165-167	81	Character of antiguerrilla operations	166	81
Artillery:			Characteristics, target.....	97	51
Annex to a corps SOP.....	app. VII	133	Charts:		
Echelons.....	25	17	and forms.....	app. VI	113
Fire planning, procedures.....	94	48	and records.....	125	65
Fire plans.....	93, app. III	48, 97	Crossing, river.....	159	79
Headquarters:			Decision to fire.....	102	55
At higher echelons.....	30	18	Defense of a river line.....	161	79
General.....	28	18	Defensive operations, fire support....	89	47
Organizations, general.....	23	17	Definitions, fire planning.....	85	43
Staffs, general.....	8-19	6-12	Desert operations, general.....	153	77
Support:			Determination of suitable weapons...	99	52
Attack of towns.....	157	78	Displacement:		
Defense of towns.....	158	78	Direct support battalions.....	52	32
Attack of targets.....	123	64	General.....	51	31
Method.....	100	54	General support battalions.....	53	32
Time.....	101	54	Reinforcing battalions.....	54	33
Aviation:			Division:		
Army employment.....	80	42	Artillery:		
Army, general.....	78	42	Assistant fire support coordi-	121	63
Battery, the firing.....	31	18	nator.		
Battalion:			Fire support plan.....	app. II	89
Headquarters and headquarters	29	18	Intelligence representative..	121	63
battery.			Fire support coordinator.....	121	63
Staff.....	20	12	Duties of fire support coordination	121	63
Standing operating procedures... app. VII		133	center personnel.		
Bivouacs and marches.....	55-66	33	Echelons, artillery.....	25	17
Combat in towns, general.....	156	78	Elements, locating and displacing....	35	23
Command posts.....	21, 22	13, 14	Employment of army aviation.....	80	42
Responsibilities.....	5	5	Establishment of fire support coordi-	117	62
Communications:			nation center.		
Airborne operations.....	175	85	Estimate of the situation.....	7	6
General.....	74	41	Example of artillery annex to a corps app. VII		133
Fire support coordination center..	120	63	SOP.		
Jungle operations.....	152	77	Execution of fire support.....	124	65
The mountains.....	142	75	Fire:		
Tactical employment.....	75-77	41	Capabilities:		
Composition of fire support coordina-	119	62	Checklist.....	app. V	107
tion center.			In the jungle.....	145	75

	Paragraphs	Page		Paragraphs	Page
Fire—Continued			Movement:		
Direction:			Air mobile.....	168	82
Center.....	105	56	To the beach.....	133	72
General.....	104	55	Night attacks and raids.....	134, 135	73
In mountainous terrain.....	138	74	Nuclear:		
Planning:			Fire support request.....	app. VI	113
Techniques definitions.....	85	43	Weapons, target analysis.....	app. VI	105
Weapon and ammunition.....	87	45	Observation:		
Plans:			In the desert.....	154	77
General.....	91	48	In the jungle.....	146	76
Air.....	92	48	Offensive operations, fire support.....	88	45
Artillery.....	93	48	Operation order.....	122	63
Support:			Operations:		
Coordination charts and forms.....	app. VI	113	Airborne.....	171	84
Coordination charts and records.....	125	65	Amphibious.....	128	67
Coordination forms.....	app. VI	113	Desert.....	153	77
Coordination center or fire support element.....	app. VI	113	Jungle.....	143	75
Considerations.....	83	43	Mountain.....	136	73
Defensive operations.....	89	47	Organizational requirements:		
Element.....	111	58	General.....	26	17
Execution.....	124	65	Specific.....	27	17
General.....	82	43	Organizations artillery.....	23	17
Offensive operations.....	88	45	Organizational requirements:		
Plan.....	122	63	Airmobile movement.....	169	83
Plan, general.....	app. II	89	Combat in supporting friendly guerrillas.....	164	81
Planning procedure.....	84	43	Planning airmobile movements.....	170	83
Principles.....	107	57	Plans and estimates, airborne operations.....	172	85
Relationships.....	108	58	Positioning artillery units, methods.....	34	19
Firing battery.....	31	18	Positions in jungle operations.....	149	76
Flak suppression.....	90	48	Post command.....	21, 22	13, 14
Functions:			Prearranged missions.....	99	52
Of the fire support coordination center.....	116	62	Preparing standing operating procedures, general.....	app. VII	131
Of the fire support element.....	112	58	Procedures:		
Of the tactical operations center.....	110	58	Artillery fire planning.....	94	48
General procedures of fire support.....	122	63	Of fire support.....	122-125	63-65
Guerrillas, supporting friendly.....	162-164	80	Of the fire support element.....	112	58
Guide for:			Purpose.....	1	3
A battalion SOP.....	app. VII	133	Raids.....	135	73
The artillery annex to a corps SOP.....	app. VII	133	Reconnaissance selection and occupation of position.....	36-50	24-31
Headquarters, artillery general.....	28	18	References.....	app. I	87
Heliports and airfields.....	81	42	Rehearsal of amphibious operations.....	132	72
Intelligence for airborne operations.....	174	85	Requirements:		
Jungle operations, general.....	143	75	Organizational:		
Location of fire support coordination center.....	118	62	General.....	26	17
Locating targets in the jungle.....	148	76	Specific.....	27	17
Maintenance in the desert.....	155	77	Responsibilities, commanders.....	5	5
Marches and bivouacs.....	55-66	33-37	River:		
Method of attack.....	100	54	Crossing general.....	159	79
Methods of positioning artillery units.....	34	19	Support of defense.....	161	79
Mobility:			Security:		
In jungle operations.....	144	75	General.....	67-73	37-41
In mountain operations.....	137	74	For airborne operations.....	176	86
Mountain operations, general.....	136	73	For jungle operations.....	150	76

	Paragraphs	Page		Paragraphs	Page
Selection of type effect.....	98	52	Tactics.....	3	3
Service battery.....	32	18	Target analysis.....	95, 96	50
Situation, estimation.....	7	6	General.....	app. IV	105
Special conditions, definitions.....	126	67	Nuclear weapons.....	app. IV	105
Staffs:			Target:		
Artillery general.....	8-19	6-12	Characteristics.....	97	51
Battalion.....	20	12	Location in mountain operations.....	140	74
Standing operating procedures, preparation.	app. VII	133	Attack.....	123	64
Suitable weapons.....	99	52	Of opportunity.....	86	44
Supporting:			Terms.....	2	3
Antiguerrilla operations.....	165	81	The artillery plan in amphibious operations.	131	69
Friendly guerrillas.....	162-164	80, 81	Time of attack.....	101	54
Support:			Training for airborne operations.....	173	85
Of a defense of a river line.....	161	79			
Of a river crossing.....	160	79			
Survey in the jungle.....	147	76			

EXPLODED EXAMPLE - FIRE SUPPORT PLAN

The security classification assigned to the fire support plan. This classification also appears at the top and bottom of each succeeding page of the plan, overlays, appendices, tabs, and inclosures.

As the fire support plan is always issued in conjunction with an operation order, reference to oral orders is omitted as changes in such orders requiring modification of the fire support plan will be either contained in the basic operation order or issued as a change to the basic document.

Designation of the fire support plan. Issued as an annex to the operation order with the appropriate letter designation followed by reference to the basic document.

References. Maps or publications necessary to the understanding of the plan by all recipients are listed. Maps should be identified as accurately as possible, listing area, sheet number, and scale.

Time zone. If recipients are located in two or more time zones, the time zone of the issuing headquarters (for basic reference) is noted here. As, in this case where all recipients are in the same time zone, this is omitted.

Enemy forces. Refer to the current intelligence annex or publication which contains information concerning the enemy situation. If pertinent, refer to any particular enemy capability (such as air) which may have a definite impact on fire support agencies.

Friendly forces. State so much of the corps mission as is required for coordinated action by recipients of the fire support plan. List the units furnishing air support to the army or corps. Follow with the fire support units, not organic or attached, on which the division may call directly for fire support (e.g., corps "GS-reinf" or "reinf" battalions or groups) or naval units in GS or DS. Organization for combat of reinforcing units may be shown. Information may also be included concerning long range missile units with a mission of GS that may possibly be fired in support of corps (div) operations.

Attachments and detachments. List fire support units now attached, or which are attached or detached by the operation order, together with the effective time and date.

Mission. State the mission of the force, extracted verbatim from the operation order.

Execution. In separate lettered subparagraphs, give a brief concept of the operation, then indicate fire support to be rendered by available fire support agencies, such as air, artillery, and naval gunfire. When available, nuclear, chemical, radiological, and biological weapons, although not separate fire support agencies, are also listed separately to indicate the importance attached to their support. List fire support agencies in alphabetical order.

Artillery support. General. Give information of the echelons of artillery such as corps or division artillery, which will support the operation; information of a preparation, if any, and its duration; and any restrictions placed on the use of higher echelon artillery with a primary mission of reinforcing division artillery. Organization for combat. Division Artillery. Give organizations for combat of artillery units organic or attached to the command. A mission must be assigned to each. List FA groups attached to the division and show elements thereof. List division artillery units, organic or attached, in numerical sequence by regimental number. Batteries assigned a separate tactical mission under direct division artillery control are listed separately in alphabetical sequence immediately following the parent battalion. Reinforcing artillery. (Use numerical designation here if only one group or battalion). Give instructions to any artillery units, not organic nor attached, which have a mission of "reinforcing" division artillery. Organization for combat of reinforcing units will be shown here if not shown in paragraph 1b. Miscellaneous. Give miscellaneous instructions and information for artillery units, such as instructions on planning of fires, and position areas and zones of fire (usually a reference to an appendix or tab). As a minimum this subparagraph will contain a reference to the Artillery Fire Plan appendix.

Naval Support (when applicable). This subparagraph is similar to the air support subparagraph and gives a general information, allocation of support from higher headquarters, plus suballocations of fire support and of control personnel to lower echelons. These are followed by miscellaneous instructions. The last item under "miscellaneous" is a reference to the naval gunfire plan appendix.

Coordinating instructions. This is the last subparagraph of paragraph 3. Its actual letter designation depends on the number of fire support agencies available. This subparagraph contains instructions applicable to two or more fire support agencies, such as procedures for the marking of air strikes by ground fires, restrictions on firing by ground and naval weapons while friendly aircraft are conducting air strikes, procedures for coordinating flak suppression fires, and the time that fire plans must be submitted to the agency responsible for fire support coordination. Miscellaneous troop safety instructions such as permissible exposure to radiation, protection during nuclear blasts, and notification to subordinate units of impending use of nuclear weapons by friendly forces, are also included when applicable. Further, items of interest to units, such as the location of the bombline, may also be included.

Command and signal. Refer to the current signal annex and index to the signal operations instructions (SOI), if appropriate. Under command, state locations of the agency(ies) responsible for fire support coordination, if other than that prescribed by SOP. Their locations may be shown, if desired, even when located as given in the SOP.

Acknowledgement instructions. If the issuing headquarters wishes acknowledgement of receipt of the plan by addressees, the word "acknowledgement" will appear after paragraph 5. Acknowledgement connotes receipt, understanding, and intent to comply. The message reference number is the code designation used when recipients are acknowledging receipt either by electronic or written communication.

Appendices. If the fire support plan becomes so verbose and lengthy that recipients will have difficulty locating the instructions pertaining to them, appendices may be used to keep the basic plan as short as possible. Appendices will be referred to in the appropriate portion of the plan and listed under the heading of appendices in the ending as shown.

Distribution. If distribution is to be made according to a standard distribution list, it may be indicated as Distribution A, or C. In addition, recipients not included in the standard list must be shown separately. Care must be taken in that a standard distribution list may not be appropriate for the order being issued, and a separate appendix showing recipients, number of copies, and copy numbers may have to be prepared.

(Classification)

Copy Nr 14
1st Inf Div
PACIFIC CITY (1935), BAH
131800 Sept 19
GR 36

Since this plan is normally a classified document, each copy must be numbered for accounting purposes.

The force headquarters responsible for the conduct of the operation is designated.

The place of issue, usually expressed as a general geographic location, amplified by coordinates.

Date and time of signature. Designated by a six-digit time group. Unless otherwise indicated in the plan, this is the date and time at which this plan becomes effective. Normally coincides with the date and time as contained in the basic operation order.

Message reference number. Usually expressed as a coded symbol. To be used by recipients to indicate receipt of the fire support plan in reply to acknowledgement instructions contained in the ending of the plan.

Situation. State in subparagraphs a, b, and c respectively so much of the general situation as is deemed necessary for commanders and staffs of the fire support agencies to know concerning enemy capabilities which can affect fire support agencies, fire support units which will support the division or reinforce fires of division units, and fire support units which are attached to, or detached from, the division.

Concept of operation. In paragraph 3a, state the concept of operation of the force commander. In this case, it is divided into three subparagraphs. It may have been stated in a single subparagraph. Considerable latitude is permissible in the preparation of the concept and it may be copied verbatim from the basic operation order. It is normal in the statement of the concept as contained in the fire support plan to condense the portion relative to maneuver (if extensive) and accent or elaborate the concept as applies to the fire support agencies.

Air support. General. General information concerning air support available to corps or army plus commanders desires on use of such air support, other than that specifically allocated, as may become available. Allocations. (1st subparagraph) By higher headquarters, and not further allocated to subordinate units. (2d subparagraph) To subordinate units (air support, or air control agencies such as forward air controllers (FAC's) and air control teams (ACT)). Miscellaneous. Miscellaneous coordinating instructions and information concerning air support or the method and time of requesting preplanned air strikes when such are not covered by SOP or constitute a change to SOP. As a minimum, this subparagraph must make a reference to the Air Fire Plan appendix.

Attached ADA units should be listed following the last organic or attached FA unit. An air defense task will be assigned to each such unit.

Nuclear support (when applicable). This subparagraph will contain, as a minimum, a reference to the nuclear fire plan appendix. It may be similar to the air support subparagraph and give the general plan of employment and, if appropriate, allocations of units and weapons. The last item, titled "Miscellaneous," would contain a reference to the nuclear fire plan appendix.

Note. When nuclear fires are planned for many targets, a separate nuclear fire plan may be prepared. Normally, all fires will be included on a single plan if they will be delivered by a single firing system.

Administration and logistics. Refer to the current administrative order. List any special administrative instructions applicable to this operation and of concern to the fire support agencies, such as a directive to dump ammunition in excess of basic load on position. State only items which are of interest to fire support agencies which require special emphasis, or which have changed since the administrative order was published. These may include the location of the division ammunition office (DAO) and appropriate available supply rates.

Signature. As is the operation order, the original of the fire support plan is signed by the force commander or his authorized representative. With the authentication the responsibility of the force G3 (S3) has the staff responsibility for the integration of the fire support plan with the plan of maneuver.

Annex C (Fire Support Plan) to OPOD 18

References: BAH, 1:50,000, CAPE FORTH-ATHENAL

Time Zone: Quebec

1. SITUATION

a. Enemy Forces.

(1) Annex A (Intelligence) to OPOD 18.

(2) Enemy air capable of 40 bomber and 150 fighter-bomber sorties per day in zone of 1st Corps.

b. Friendly Forces.

(1) 1st Corps atk 140430 Sept with the 1st Inf Div on the east, 2d Inf Div on the west; seizes the N bank of the IDAWANA River and destroys enemy in zone.

(2) Ninth TAF spt 1st Army with minimum allocation of 100 Tac Bmr and 300 Ftr Bmr sorties daily for the period 140400 Sept to 152000 Sept. Priority to 1st Corps until seizure of North Bank of IDAWANA.

(3) Artillery Support.

(a) 1st FA Msl Gp (Redstone): GS, First Army; priority of fires to 1st Corps.

(b) 4th Armd Div Arty:

1st How Bn (105-mm) (SP), 32d Arty.

1st How Bn (105-mm) (SP), 34th Arty.

1st How Bn (105-mm) (SP), 36th Arty.

1st FA Rkt/How Bn, 38th Arty.

GS-Reinf 1st Inf Div Arty; on order revert to 4th Armd Div control.

(c) 101st Arty Gp: Reinf 1st Inf Div Arty.

(4) Naval Support: Naval Fire Support Group (TG 38.1) spts 1st Corps; fire support unit two (TU 38.12) provides support to division.

c. Attachments and detachments. Attached effective 131900 Sept.

(1) 1st How Bn (105-mm) (SP), 40th Arty.

(2) 6th How Bn (155-mm) (SP), 50th Arty.

(3) 1st FAW Bn, 48th Arty.

2. MISSION

Div atk 140430 Sept to destroy enemy in zone; deny area N of the IDAWANA River to enemy. Prepares to continue atk to the south. Annex B, Opn Overlay.

3. EXECUTION

a. Concept of Operation.

(1) General. The atk will be a rapid exploitation of nuclear fires. Surprise is vital. Maximum dispersion consistent with accomplishment of mission will be maintained throughout the operation.

(2) Maneuver. Division will penetrate aggressor position with nuclear fires, 1st Brigade on the West and 2d Brigade on the East. Main attack consists of the 1st Brigade. Upon seizure of obj. 1 and 2, 3d Brigade will be committed to seize obj. 3 and 4.

(3) Fire Support. At H-30 minutes, division will employ one BRAVO weapon on enemy forces on hill 374 (1939) and a CHARLIE weapon on hill 412 (2241). A 35-minute nonnuclear preparation will be fired beginning at H-25 minutes. Initial division reserve consists of two BRAVO weapons.

b. Air Support.

(1) General. Sixteen fighter-bomber on air alert from H to H+1 hour over Corps zone to be assigned missions as approved by Corps Tactical Operations Center. Armament - mixed load.

(2) Allocations. Priority of air support to div for period 140400 to 140900 Sept.

(3) Miscellaneous. App 1, Air Fire Plan.

c. Artillery Support.

(1) General. Artillery will support the attack with a nuclear preparation at H-30 minutes. A nonnuclear preparation will be fired from H-25 minutes to H+10 minutes.

(2) Organization for Combat.

(a) Div Arty.

1. FA.

1st How Bn, 3d Arty: DS 1st Bde.

1st How Bn, 5th Arty: DS 2d Bde.

1st How Bn, 7th Arty: GS-reinf 1st How Bn, 3d Arty; on order DS, 3d Bde.

1st How Bn, 9th Arty: GS-reinf 1st How Bn, 5th Arty.

1st Msl Bn (HJ) (SP), 10th Arty: GS.

1st How Bn, 40th Arty: Reinf 1st How Bn, 3d Arty; on order reinf 1st How Bn, 9th Arty.

6th How Bn, 50th Arty: GS.

2. ADA.

1st FAW Bn, 48th Arty: Protect in priority.

1st How Bn, 3d Arty; Div CP; Div air strips; bridges in div zone with 60-ton capacity or more.

(b) Reinf Arty.

101st FA Group.

1st How Bn (155-mm) (SP), 50th Arty.

1st How Bn (155-mm) (SP), 51st Arty.

1st How Bn (8-in) (SP), 70th Arty.

2d How Bn (8-in) (SP), 70th Arty.

(3) Miscellaneous.

(a) 1st How Bn, 3d Arty will plan the fires of the 1st How Bn, 7th Arty and the 1st How Bn, 40th Arty during the preparation.

(b) 1st How Bn, 5th Arty will plan the fires of the 1st How Bn, 9th Arty from H-10 to H+10.

(c) 1st How Bn, 9th Arty will plan the fires of the 1st How Bn, 40th Arty when reinf.

(d) App 2, Arty Fire Plan.

d. Naval Support.

(1) General. Fire support unit two (TU 38.12) spt the atk beginning H-1 hour; H-25 min to H+10 min spt the atk with preparation.

(2) Allocation of naval gunfire support.

2 CA: GS div until relvd on Corps order.

1 CL: DS 1st Bde.

(3) Miscellaneous. App 3, Naval Gunfire Plan.

e. Nuclear Support. App 4, Nuclear Fire Plan.

f. Coordinating Instructions.

(1) Subordinate units will be notified of nuclear fires through command and fire direction channels.

(2) Troops forward of NSL 1 take normal precautions during nuclear preparation, H-30 to H-25.

(3) Report of post strike analysis of tgts to div on completion of study by fire support agency.

(4) Arty fire plans to reach div arty FDC by 132400 Sept; requests for prearranged air missions, naval fires, and nuclear fires to div FSCC by 132400 Sept.

(5) Emergency signal for lifting fires - green star cluster.

4. ADMINISTRATION AND LOGISTICS

a. Div ADMINO 14.

b. Aval Spt Rate, 13-17 Sept.

105-mm - 150

155-mm - 120

8-in - 60

5. COMMAND AND SIGNAL

a. Signal.

(1) Index 1-66, SOI, eff 140001 Sept.

(2) Normal rad traffic prior to atk.

b. Command. SOP.

Acknowledge.

Appendices:

1-Air Fire Plan

2-Artillery Fire Plan

3-Naval Gunfire Plan

4-Nuclear Fire Plan

Distribution: A

4th Armd Div Arty

101st Arty Gp

Naval Fire Spt Unit Two (TU 38.12)

OFFICIAL:

/s/ Blank

BLANK

G 3

GRIFING

Maj Gen

(Classification)

Figure 16. Fire support plan.

Figure 16.





BY ORDER OF THE SECRETARY OF THE ARMY:

G. H. DECKER,
General, United States Army,
Chief of Staff.

Official:

J. C. LAMBERT,
Major General, United States Army,
The Adjutant General.

Distribution:

Active Army:

DCSPER (2)

ACSI (2)

DCSLOG (2)

ACSRC (2)

DCSOPS (10)

CRD (1)

CoA (1)

CINFO (1)

TIG (1)

TJAG (1)

TPMG (1)

Tech Stf, DA (1)

USCONARC (20)

ARADCOM (1)

ARADCOM Rgn (1)

Armies (5)

Corps (3)

Corps Arty (10)

Div (5)

Div Arty (10)

LOGCOMD (1)

Combt Arms Bde (5)

FA Gp (5)

FA Bn (5)

FA Btry (5)

Div Bn & Sqdns (1) except

FA Arty Div Bn (5)

Div FA Btry (5)

MAAG (5)

Mil Msn (5)

CDEC (5)

USAAMS (2500)

USACGSC (4825)

USARADSCH (250)

USAARMS (1250)

USAAVNS (10)

USAIS (37)

TOE 17-22 (5)

NG: State AG (3); units—same as Active Army except allowance is two copies to each unit.

USAR: Same as Active Army except allowance is two copies to each unit.

For explanation of abbreviations used, see AR 320-50.

S/S Mar 70

FM 6-20-2
C 1

FIELD MANUAL

FIELD ARTILLERY TECHNIQUES

FM 6-20-2

CHANGES No. 1

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON 25, D.C., 3 January, 1963

FM 6-20-2, 8 January 1962, is changed as follows:

The following pen and ink changes will be made

Page 3. Paragraph 2b, line 2, delete the word "either".

Page 12. Paragraph 16b, line 1, delete the word "and".

Paragraph 16f, line 1, change "close" to read **closely**.

Page 27. Paragraph 48a(2), line 1, change "initial" to read **start**.

Page 28. Paragraph 49b(1), line 3, change "mechanical" to read **mechanized**.

Page 34. Paragraph 57a(4), line 1, change "of" to read **to**.

Paragraph 57a(5), line 2, change "initial" to read **start**.

Paragraph 57b, line 10, change "The" to read **These**.

Paragraph 57c, line 6, change "for" to read **to**.

Page 95. Paragraph 3, line 2, delete "artillery".

Paragraph 3, (EXECUTION) b(1) (b) line 1, change "md" to read **Armd**.

Page 96. Subparagraph c(2) (a) 3., line 5, change to read 3d How Bn (8-in) **70th** Arty.

Page 99. Paragraph 2a(1), line 2, change "of interest" to read **planned**.

Line 5, change "must" to read **may**.

Page 116. Figure 30, Msn column, change "BG" to read **BDE**.

Page 122. Above figure number, delete "Example 7.1. App V."

Remove pages	Insert pages
13, 14.....	13, 14
15.....	15, 16 (blank)
43, 44, 45, 46.....	43, 44, 44.1, 44.2 (blank), 45, 46, 46.1, 46.2 (blank)
51, 52.....	51, 52
65.....	65, 66 (blank)
none.....	86.1, 86.2
91, 92.....	91, 92
97, 98.....	97, 98
101, 102, 103, 104.....	101, 102, 102.1, 102.2 (blank), 103, 104
113, 114.....	113, 114
145, 146.....	145, 146
153, 154.....	153, 154

By Order of the Secretary of the Army:

EARLE G. WHEELER,
General, United States Army,
Chief of Staff.

Official:

J. C. LAMBERT,
Major General, United States Army,
The Adjutant General.

Distribution:

Active Army:

DCSPER (2)
ACSI (2)
DCSLOG (2)
DCSOPS (10)
Ofc, Res Components (2)
CRD (1)
COA (1)
CINFO (1)
TIG (1)
TJAG (1)
TPMG (1)
CofEngrs (1)
CofT (1)

TSG (1)
CSigO (1)
AMC, Det #1 (ORD) (1)
USCONARC (20)
Hq, Army Mat Comd (5)
ARADCOM (1)
ARADCOM Rgn (1)
LOGCOMD (1)
Armies (5)
Corps (3)
Corps Arty (10)
Div (5)
Div Arty (10)

FA Gp (5)
FA Bn (5)
FA Btry (5)
CDEC (5)
USACGSC (5,825)
USAAMS (2,500)
USARADSCH (250)
USAARMS (1,250)
USAAVNS (10)
USAIS (37)
Units organized under following
TOE:
17-22 (5)

NG: State AG (3) ; units—same as Active Army, except allowance is two copies to each unit.

USAR: Same as Active Army, except allowance is two copies to each unit.

For explanation of abbreviations used, see AR 320-50.

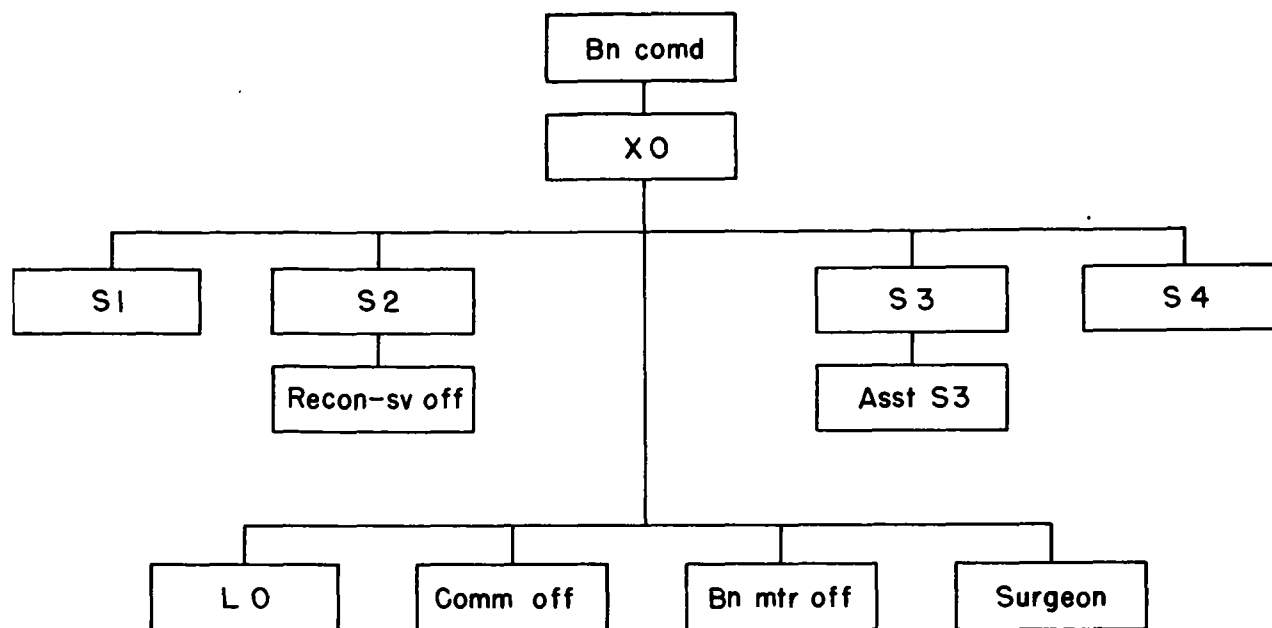


Figure 5. A type battalion staff.

plans and orders and take the action necessary to carry them out. The battalion staff must have a thorough knowledge of the commander's policies, and in areas for which no policy has been established, initiate action to establish command policy.

b. The organization of a battalion staff is based on the functions of the battalion commander. It follows the organization of other military staffs (FM 101-5). Within the limitations of the tables of organization, the staff organization and the assignment of functions to staff sections are the prerogatives of the battalion commander. Figure 5 shows a type battalion staff.

c. Staff officers have no command authority. Although they may formulate and transmit orders to the batteries, they do so only in the name of the battalion commander. The limits of their authority are determined by the battalion commander's policy. He is responsible for orders issued by members of his staff.

d. The staff officer, as chief of a staff section, supervises the personnel in his section.

e. Coordination is essential within the staff, between the staff and subordinate commanders, and with the staff of the next higher artillery headquarters, the supported units, and the reinforced units.

Section III. COMMAND POSTS

21. General

The command post (CP) is the artillery headquarters where the commander, assisted by his staff, exercises his administrative and tactical functions. The headquarters is often divided into forward and rear echelons; the forward echelon normally is the command post.

a. *Command Post.* Operations and intelligence are the principal staff functions con-

ducted at the battalion command post. Other staff functions contributing to intelligence and operations are reconnaissance, survey, communications, liaison, and logistics.

b. *Rear Echelon.* When the artillery headquarters is divided into two echelons, administrative details of the command are conducted at the rear echelon. The rear echelon of the battalion may be located with the division rear echelon.

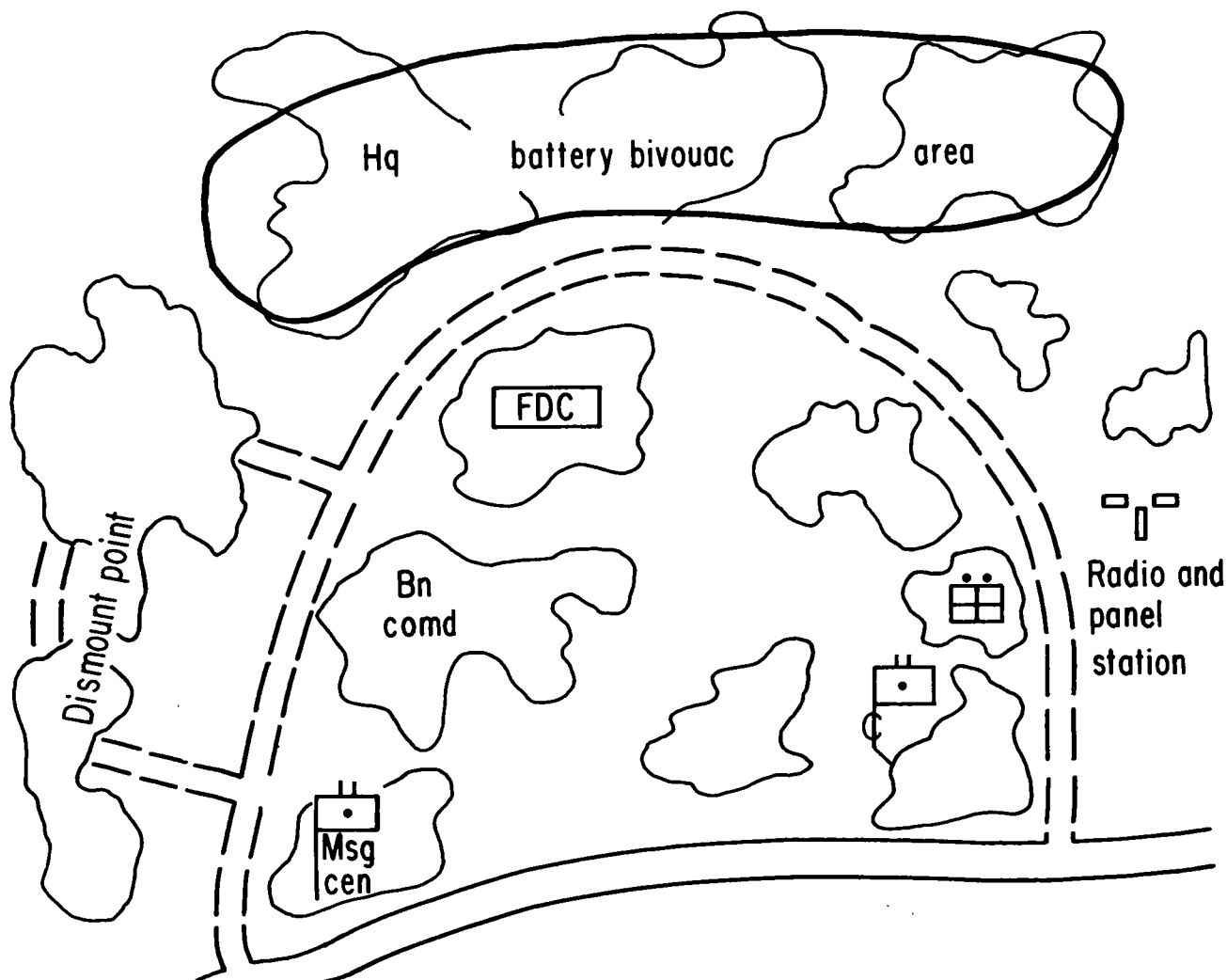


Figure 6. A type battalion command post area.

22. Command Post Area

a. General. The need for concealment, dispersion, reliable communications, access routes, and other tactical considerations influence the selection of a location for an artillery command post (CP). However, the most important factors influencing the CP selection are the requirements to exercise control of subordinate artillery, fire planning, and the ability to function, in an emergency as a force command post. The fire direction center is usually located near the artillery headquarters battery or headquarters element. The element that coordinates fire support is usually located at the command post of the force to establish the fire support

coordination agency or to conduct necessary liaison on fire support matters.

b. Physical Layout of the Command Post.

- (1) The physical layout of the command post depends upon the space available, terrain, shelter, and policy of the commander. It is desirable to organize the tactical operations sections of the command post into two separate parts—one for fire direction functions and the other for operations planning and intelligence functions. To facilitate the coordination of these functions, the two parts should be so located that voice contact between them is feasible.

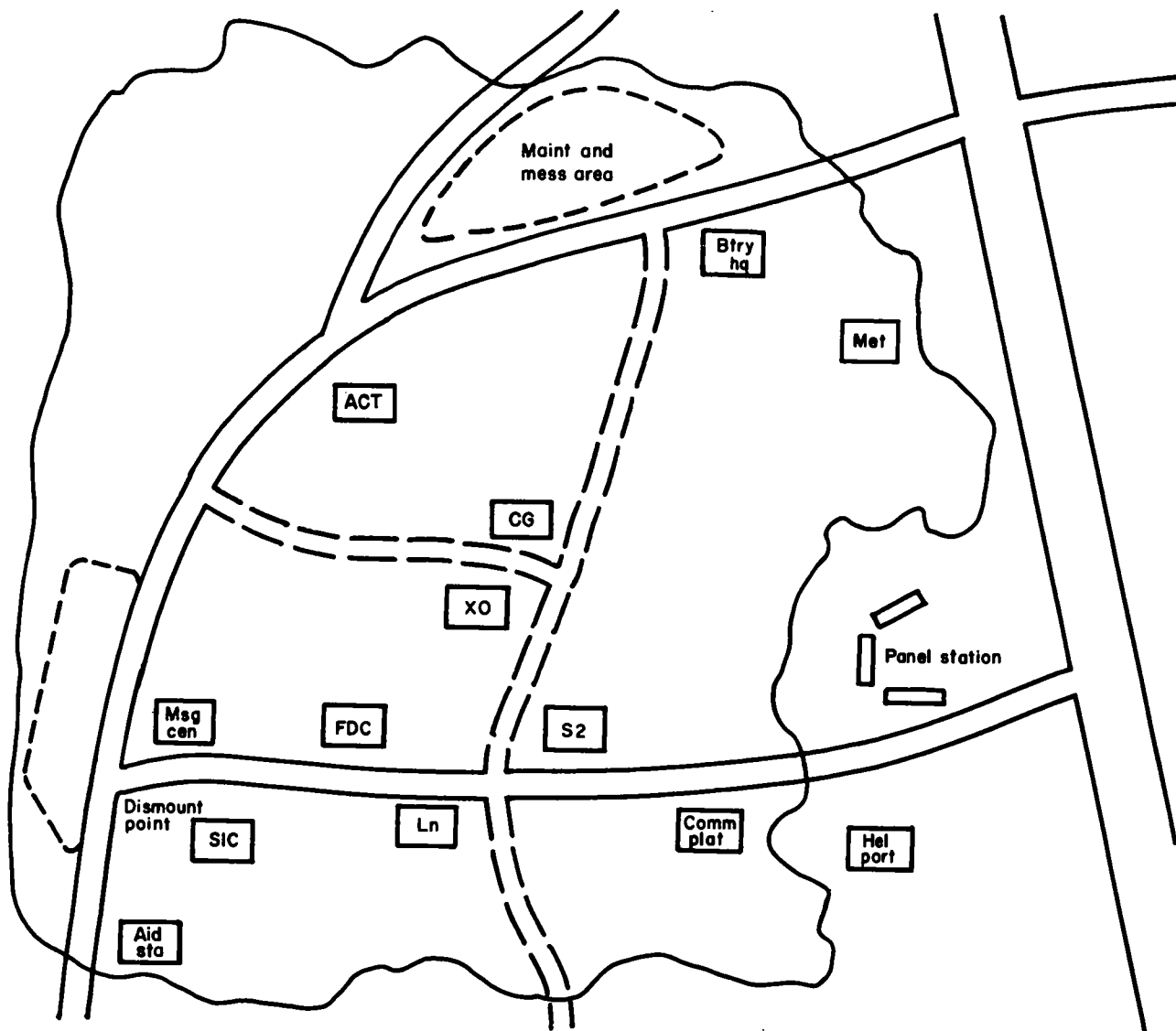


Figure 7. A type division artillery command post area.

- (2) The fire control element should be located some distance from other command post elements. It should be easily accessible but not so near the CP entrance that it will attract casual visitors.
- (3) The location of the other elements of the command post will be dictated by the situation. An installation should be provided near the CP entrance for the reception and information of visitors. Type command post layouts are shown in figures 6 and 7.



CHAPTER 5

FIRE SUPPORT

Section I. GENERAL

82. General

a. A thorough knowledge of fire support planning is necessary to obtain maximum effect from the available artillery support. Fire support planning is conducted by force headquarters of all levels.

b. Fire support planning is continuous. The detail with which fire plans are made depends on the time available for planning, the extent and accuracy of target locations, the type of operation in which the supported unit or force is engaged, the fire support requirements of the higher echelon, and available fire support.

c. Fire support planning does not cease with the issue of a fire support plan but continues throughout the operation. All elements of the fire support plan must be considered in preparing fire plans (air, artillery, naval).

83. Considerations in Fire Support Planning

The following factors must be considered in planning fires:

- a.* The mission of the supported unit.
- b.* The concept of operation of the supported unit commander.
- c.* Requirements of the fire support plan of higher headquarters.
- d.* The general location, time, duration, and priority of fires desired.

e. Information of the enemy to include the size and composition of targets.

f. Ammunition available, to include nuclear weapons and their location.

g. Fire support means available.

h. Observation requirements.

i. Common index for terrain, as established by the force and used by the support means.

j. Common target designation system.

k. Emergency signal for lifting or shifting fires.

l. Troop warning capability.

m. Allocation of nuclear weapons.

n. Limitations on fires, such as requirements for no fallout.

84. Planning Procedure

a. The fire support plan is made by the fire support coordinator as directed by the supported commander to insure complete coordination between the plan of maneuver and the plan of fire support. It amplifies the fire support portion of the commander's concept of operation by providing specific information and instructions for fire support.

b. The fire support plan forms a basis for the preparation of the fire plans of the air, artillery, and naval gunfire agencies.

Section II. TECHNIQUES OF FIRE PLANNING

85. Definitions

The following terms used in fire planning must be understood before the technique of fire planning can be discussed:

a. General. The definitions in this section are essential to the techniques of artillery fire planning—artillery fires, in general, fall into two categories.

- (1) Targets of opportunity (par. 86).
- (2) Planned Fire. Fires (concentrations) planned on areas or points for which a need is expected. Planned fires are either:

(*a*) Scheduled fires—fires which are to be delivered at a specific time during the operation of the supported force. Time is specified in terms of minutes before or after H-hour or on accomplishment of a predetermined movement or task.

(*b*) On-call fires—planned fires, other than scheduled fires, for which a need can be anticipated. On-call fires are further subdivided:

- 1. Targets for which firing data are kept current.

2. Targets for which firing data is not prepared in advance. Examples in this category are terrain features such as road junctions or points on critical terrain; these points may be used as references and may not require attack by artillery fires.

b. Concentration—A volume of fire placed on an area within a limited time, or an area designated and numbered for future reference as a possible target.

c. Group of Fires—Two or more concentrations desired to be fired simultaneously. The concentrations within a group of fires may be fired individually, consecutively, or concurrently. A group of fires may be designated by a letter and numerical combination.

d. Series of Fires—Number of concentrations or groups of fires planned to support a maneuver phase. An example is the series of fires planned on an objective area just prior to the final assault. A series of fires may be indicated by a code name.

e. Program of Fires—Fires planned on targets of a similar nature such as hostile cannon, mortars, missiles, command installations and the like. A program may be included in a schedule of fires, fired on call, or attack according to the commander's tactics.

f. Preparation—Intense prearranged fire delivered in accordance with a time schedule, in support of an attack, to disrupt the enemy's communications, disorganize his defenses, and neutralize his fire support means. Preparations start prior to, at, or after H-hour and continue until lifted either on a prearranged time schedule or on request of the assault elements. A preparation may include nuclear and non-nuclear fires of air, ground, and naval means.

g. Counterpreparation Fire—A system of intensive prearranged fires delivered when the imminence of the enemy attack is discovered. It is designed to break up enemy formations; disorganize the enemy's system of command, communication, and observation; decrease the effectiveness of his artillery preparation; and impair his offensive spirit.

h. Barrage—A prearranged barrier of fire designed to protect friendly troops and instal-

lations by impeding enemy movement across defensive lines or areas. It is generally part of the final protective fires.

i. Schedule of Fires—A tabular or graphical presentation of scheduled fires which is fired in definite time sequence. The time of starting the schedule may be on call, at a prearranged time, or at the occurrence of a specific event.

j. Supporting Fire—Fires delivered while the supported troops are engaged in either the attack or the defense. Supporting fires may be prearranged as to both time and place (scheduled fires), fired on request (on-call fires), or they may be fired on targets of opportunity.

k. Harassing Fire—Fire delivered for purposes of disturbing the rest, curtailing the movement, and lowering the morale of enemy troops by the threat of casualties or losses in materiel.

l. Interdiction Fire—Fire delivered for the purpose of denying the enemy the unrestricted use of an area or point.

m. Neutralization Fire—Fire delivered for the purpose of reducing the combat efficiency of enemy personnel by hampering and interrupting the fire of weapons, by reducing the freedom of action of the enemy, by reducing the ability of the enemy to inflict casualties on our troops and by severely reducing the movement of the enemy within an area. The period of neutralization can be for the duration of fire up to several hours. Casualties may or may not be inflicted by neutralization fire. A satisfactory degree of neutralization can be accomplished by delivering smoke on a target or by screening the friendly force from the enemy.

86. Targets of Opportunity

Targets of opportunity are those targets first observed after the beginning of an operation. They have not been previously considered, analyzed, nor planned. Since they are generally fleeting in nature they should be attacked as soon as possible. Attack of these targets involves the same general considerations as planned fires. Effective attack of targets of opportunity requires—

a. Employment of adequate reconnaissance and intelligence agencies by the commander.

b. Direct exchange of information and/or intelligence between higher, lower, and adjacent units.

c. Employment of the weapon that can place rapid effective fire on the target.

d. Sufficient ammunition on hand.

e. Rapid analysis of the target, prompt decision to fire, and subsequent fire order.

f. Close and continuing coordination with interested personnel and agencies.



87. Determination of Weapon and Ammunition

a. Target Information. Timely target information is essential to enable the commander to properly influence the action with his available firepower. A single observer may be unable to provide all the information required by the commander or his representative to determine the weapon and ammunition to be used; all sources of information and acquisition must be exploited.

b. Tactical Significance. Certain targets may possess sufficient tactical importance to warrant attack by a specific weapon or ammunition without regard for the size or density of the target.

c. Results Desired. Certain targets may be destroyed or neutralized by specific weapons or types of ammunition; e.g., persistent chemicals may be used as barrier defenses; nonpersistent chemicals may be used to incapacitate large numbers of troops; or munitions may be used to destroy and contaminate personnel and material. Surface bursts of nuclear weapons may be utilized to extend casualty producing levels of fallout to greater distances and over wide areas.

d. Target Size. Consideration must be given to the radius of effect of the weapons and to the area of terrain affected by these weapons. In this connection, nonnuclear artillery and nonnuclear tactical air have the flexibility necessary to attack targets occupying very small areas as well as those occupying larger areas. The larger areas require multiple units and excessive ammunition expenditure with a comparatively low order of "target kill." Conversely, nuclear and CBR munitions attacking small area targets risk expensive "over-kill"; therefore, the area occupied by the target is a consideration in weapon selection.

e. Reaction Time. The reaction time varies with the weapon system and the state of readiness of the weapons within the system. Nonnuclear artillery fire is most responsive. The response time of tactical air will depend on the status of the aircraft: "air alert" is most responsive and most uneconomical; "ground alert" is not so responsive but assures maximum use of available support. The reaction times of nuclear firing systems vary with the complexity of the system.

f. Time Requirements. The time required for delivery of fire, after the target information is available, depends on three primary factors:

- (1) The time required to process the information into a specific recommendation or decision as to weapon and ammunition.
- (2) The time required to compute data and, concurrently, to secure command approval in situations not covered by directives, guidance, or policies.
- (3) The time required to warn troops and aircraft within the radius of weapon effects.

Note. The effects of munitions and the capabilities of weapons are given in the appropriate field and technical manuals.

g. Radius of Integration. The radius of integration is defined as "a term used in fire planning for the integration of nuclear and nonnuclear fires. The RI is a radial distance from the desired ground zero of a planned nuclear weapon. The radial distance is that distance where the effects of the planned nuclear weapon will be approximately equal to the effects of nonnuclear weapons for average type targets." When integrating nuclear and nonnuclear fires, the nonnuclear fire planner will consider the radius of integration in the following ways:

- (1) Nonnuclear fires will be planned regardless of location of planned nuclear fires and their radii of integration.
- (2) Nonnuclear fires will be planned outside the radius of integration of a nuclear concentration, as required, without regard to the nuclear preparation.
- (3) Nonnuclear fires may be scheduled within a radius of integration when considered necessary, because of terrain, relative hardness of target, commander's requirements, etc.

88. Support for Offensive Operations

Fire support for offensive operations may consist of a preparation and subsequent fires supporting the attack. The preparation may be delivered prior to the advance of the attacking echelons from their line of departure and may continue for a short time thereafter.

a. Preparation.

- (1) Fires planned for the preparation are normally limited to known targets and suspect areas. The delivery of scheduled fires should be consistent with the threat imposed, time available for coordination, and availability of ammunition.
- (2) The force commander ordering the attack determines whether there is to be a preparation and its duration. He considers—
 - (a) Whether the probable effect of the preparation will justify the attendant loss of surprise.
 - (b) Available fire support and the supply of ammunition.
 - (c) The number of remunerative targets that can be located in time to prepare and assign fires.
 - (d) Whether the effect sought can be accomplished before the enemy can change his major tactical dispositions to meet the attack. This is particularly important when fires are delivered in support of an exploitation.
- (3) Preparations may be divided into phases to concentrate fires successively on the various targets. The number, order, and length of the phases are scheduled to fit the situation. Safety of personnel and aircraft may require separate phases of target attack.
 - (a) *First phase*—Fires to gain superiority over hostile artillery, to interdict routes, and to neutralize enemy command, communication, and observation systems.
 - (b) *Second phase*—Fires to neutralize hostile artillery and command, communication, and observation systems and to interdict routes; fires to neutralize defensive areas, weapons, reserves, assembled mechanized units, and to destroy obstacles.
 - (c) *Third phase*—Fires to neutralize targets engaged during phase I and II; delivery of massed fires on defensive areas in the forward portion of the

enemy position with priority to defensive elements that threaten the success of the supported force's attack.

- (4) The approximate length of a preparation can be determined by considering the number of known targets, the planning time for each target, the number of fire support units, and the amount of ammunition required to neutralize each target. Planning time includes the time required to fire on a target plus the time required to shift to a new target.

Example:

$$TL = \frac{\text{No. of targets} \times \text{Planning time} \times \text{No. of units used on ea. target}}{\text{No. of units available for preparation}}$$

Note. A reserve time based on experience is normally added to the computed time length of a preparation to permit the scheduling of those targets located after the cutoff time for submission of target list, and to permit the attack of targets of opportunity during the preparation.

b. Fires Supporting the Attack.

- (1) Fires planned in support of the attack are shifted to conform to the movements of the supported unit(s). These fires are planned in the form of concentrations, groups of fires, and series of fires on a time schedule or on call.
- (2) Supporting fires are planned by each echelon to—
 - (a) Assist the advance of the supported units by attacking targets as required.
 - (b) Assist the supported units in gaining fire superiority on each successive objective so that the assault echelons can close to assaulting distance.
 - (c) Protect the supported units during periods of reorganization.
 - (d) Assist in breaking up enemy counterattacks. When likely assembly areas and routes for enemy counterattacks

can be determined, concentrations are planned to be fired on-call.

- (e) Continue the neutralization of hostile observation.
- (f) Continue the neutralization of hostile artillery and automatic weapons.

- (g) Prevent the enemy from reinforcing, supplying, or disengaging his forces.
- (h) Disrupt the enemy's command and communication systems.

Note. Format for a fire support plan is shown in appendix III.



of great importance. When possible, the tactical advantage gained through the use of nuclear weapons should be fully and expeditiously exploited through maneuver. For this reason, the force commander will make the decision concerning the employment of nuclear weapons.

c. Standing operating procedures and policies of the appropriate commander must be considered early in making a target analysis. These policies must be well known to all fire support agencies to insure rapid, expeditious engagement of targets.

97. Target Characteristics and Effect of Weather and Terrain

a. *General.* Characteristics of the target include all features of the target and target area that may influence the decision to attack. Targets about which little is known may, and often should, be taken under fire. However, the more that is known about a target, the greater is the likelihood that it will be suitably attacked. Full use of available target intelligence should be made in conducting target analyses. The artillery S2 is responsible for ascertaining the target characteristics and recommending to the fire support coordinator the relative priority of attack for each target. The principal target characteristics to be considered are as follows:

(1) *Nature of the target.*

- (a) Composition.
- (b) Size and shape.
- (c) Vulnerability.
- (d) Mobility.
- (e) Recuperability.

(2) *Location of the target.* The location of the target may indicate a particular means of delivery. The proximity of the target to friendly troops and to enemy installations protected by national or theater policy should be considered. The probable accuracy of the target location should be analyzed.

b. *Terrain and Weather.*

- (1) *Terrain.* The terrain in the target area has a direct bearing on the vulnerability of the target. Rugged terrain affords considerable natural cover and makes target location difficult. Tar-

gets in defilade sometimes can be reached only by high-angle fire or by aircraft. Certain terrain provides complete defilade from some angles of approach but not from others, thereby influencing the selection of a means of attack. Frequently, it may be necessary to move a weapon to a position from which it can deliver effective fire on the target. The nature of the vegetation in the target area should be considered in the selection of ammunition. Information as to the relief, surface soil conditions, and vegetation in the target area is desirable in considering nuclear attack. Uneven terrain frequently limits surveillance of fires to aerial observation and, in some instances, completely prevents observation of fires. Uneven terrain limits sound ranging coverage, reduces radar coverage, and may reduce the effect of nuclear weapons.

- (2) *Weather.* Weather greatly affects the capability of attack by air and to a lesser degree by naval gunfire and artillery. It is of special importance in evaluating a target for nuclear or chemical attack. Information as to visibility at ground level, the amount of cloud cover, and height of the ceiling is an important requirement.

- (3) *Joint effects.* Terrain and weather jointly affect visibility of the target and further study may be required to determine a suitable means and method of attack.

c. *Target Capabilities.* Target capability is the ability, actual or potential, of a target to influence the accomplishment of the supported unit's mission. An estimate is made as to the time a target can exercise its capability. Target capability is an important consideration in determining the priority assigned to the attack of a target and the weight of fire delivered on the target. The time of attack, the effect desired, and the selection of the means to be used are influenced by target capabilities.

- (1) *Priority for attack.* There is rarely sufficient fire support to attack simul-

taneously all targets that it may be desirable to engage. Accordingly, the attack of these targets is usually spread over a period of time. On occasion, owing to such factors as ammunition shortage or inadequacy of available delivery means, it may not be possible to attack all known targets. Therefore, it is often desirable to determine the relative priority of targets for attack. Intelligence and operations representatives work together in assigning priorities. Priorities do not necessarily indicate the time of attack or the sequence in which targets will be attacked. The priority assigned a specific target will frequently depend on the echelon assigning the priority and the mission of the supported unit. A top priority target at direct support level may have a much lower priority at corps artillery level.

(2) *Priority classification.* As a guide in determining priorities for attack of targets, the following may be used:

- (a) *Priority I.* Targets capable of preventing the execution of the plan of action.
- (b) *Priority II.* Targets capable of immediate serious interference with the plan of action.
- (c) *Priority III.* Targets capable of ultimate serious interference with the execution of the plan of action.
- (d) *Priority IV.* Targets capable of limited interference with the execution of the plan of action.

d. Enemy Countermeasures. The capability of the enemy to interfere with or to prevent effective delivery of fires and his ability to minimize the effects of the fire are ascertained, if possible. These factors directly influence the delivery means to be used and the protection or assistance to be provided the delivery means. Enemy countermeasures which can be expected include counterbattery fire, air defense artillery fire, electronic jamming, the attack of position areas by tactical aircraft, and guerrilla attack.

98. Selection of Type Effect

After examining the characteristics of the target, a tentative decision is made as to the type of effect and degree of damage desired. If suitable weapons and ammunition are available, the tentative decision is confirmed. Common types of fires that may be selected are described in *a* through *d* below:

a. Destruction fires are artillery fires delivered for the sole purpose of destroying material objects. Destruction fires may be accompanied by penetration, blast effects, nuclear radiation, or incendiary action or by a combination of these actions.

b. Neutralization fires are fires which are delivered to cause casualties, to hamper and interrupt the firing of weapons, movement, or action, and to reduce the combat efficiency of enemy personnel. A satisfactory degree of neutralization sometimes can be accomplished by smoking a target or by screening a friendly force from the target. Illumination at night may assist in effecting neutralization.

c. Harassing fires are fires of less intensity than neutralization fire, designed to inflict losses, to disturb the rest of the enemy troops, to curtail movement, and in general, to lower morale.

d. Interdiction fires are fires placed on an area or point to prevent the enemy from using the area or point. Interdiction fire is usually of less intensity than neutralization fire.

99. Determination of Suitable Weapons

a. General. The characteristics of available fire support means must be considered to determine which means is most capable of producing the desired effect on the target. A less capable means may be used if time or ammunition limitations preclude the use of the most effective means.

b. Assignment of Prearranged Missions. Priority in the assignment of prearranged missions to supporting arms should ordinarily be in the order of artillery, naval gunfire, and air support. Air support ordinarily is not assigned a mission which can be accomplished as well by artillery or naval gunfire, and naval gunfire is not assigned a mission that is better suited to artillery. This principle, however, must not

(15) Predicted post-strike condition of the target area.

(16) Tactical benefits to be gained.

c. During the planning phase, requests for allocation of fire support are forwarded through normal command channels as are requests for modification or change in the fire support allocated in the fire support plan.

124. Execution of Fire Support

a. Requests for immediate fire support are transmitted over normal artillery, air, and naval fire channels.

b. When considering the attacks of a target, the fire support coordinator or his representative determines which support agency can best attack the target.

(1) When the mission can be fired by the artillery available to the echelon concerned, it is fired in the normal manner. If other artillery fires are required, they are requested from the next higher artillery echelon.

(2) When naval fire is to be employed to attack a target, it is fired by the direct or general support ship(s) of the echelon

concerned using naval fire procedures. If additional naval fire is required, assistance is requested of the next higher echelon.

(3) When tactical air is to be employed to attack a target, it is requested on the air request net to the tactical air support element at army. Such requests are monitored by intermediate echelons which indicate approval by remaining silent.

(4) When air defense artillery is to be employed to attack a surface target, it is requested through the ADE at FATOC or ICTOC.

(5) When nuclear fire is to be employed to attack a target, the fire support coordinator or his representative determines which fire support agency can best attack the target. The decision to employ nuclear weapons rests with the commander having an allocation of nuclear weapons.

125. Fire Support Coordination Charts and Records

Examples of fire support coordination charts and records are shown in appendix VI.



Section XIII. NORTHERN OPERATIONS

177. General

Artillery units operating in northern areas are faced with two main problems; survival and mobility. The season of the year, equipment, and training affect the survival problem. Mobility is a greater problem during the warmer months than during the colder months. Shelter and heat are major requirements for troops operating in snow and extreme cold. Concentrations of troop shelters make profitable nuclear targets. Where the enemy employs nuclear weapons, casualties may be unusually high because of direct effects of the explosion, secondary fires, and subsequent exposure to extreme cold. Where the ground is frozen and no snow cover exists, personnel are particularly vulnerable to nuclear attack. For additional information on arctic operations, see FM 31-71.

178. Plans and Preparation

Personnel and equipment must be made available well in advance of operations in northern areas so that training can be conducted under conditions similar to those anticipated in the operation. Troops must be in peak physical condition and trained in their primary duty prior to entering into deep snow and extreme cold conditions. Training should include instruction in survival, operations in subzero weather, sanitation, personal hygiene, and care of equipment in extreme cold. Specialized equipment must be used, and winterization of all items of equipment and installation of modification kits must be performed prior to arrival in extremely cold areas.

179. Survey

Survey in snow and extreme cold is slow and tedious. Lenses quickly become fogged. Computation of data is expedited when temporary shelter is provided. Control points are difficult to locate and will normally be found only along well established roads and railroads. Because of deep snow, crevices, and other obstacles natural to arctic terrain, it is often simpler and faster to run a survey by following existing roads and trails even though the cross-country distance is considerably shorter. The use of electronic equipment,

such as the tellurometer, makes survey more feasible.

180. Movement

Northern areas contain a variety of difficult terrain. Large areas are covered with coarse vegetation and boggy muskeg. Roads are scarce, and the heavy snows and swamps restrict the movement of wheeled vehicles. The best time of the year for cross-country movement of heavy vehicles is during the latter part of the freezeup period and the first part of the winter period prior to the arrival of heavy snows. The use of over-snow vehicles increases the mobility of the supply and reconnaissance echelons of the artillery unit. Self-propelled artillery weapons are more maneuverable than towed weapons; however, the present self-propelled artillery is too heavy to allow it to traverse deep snow in winter or muskeg in summer. In the summer, movement on waterways such as lakes and rivers is often possible. Extensive use should be made of the helicopter movement of airmobile artillery.

181. Positions

a. Supply difficulties greatly influence the selection of position areas. Positions are chosen for their tactical utility and for protection from the elements. Prior to occupation of a position, the terrain should be carefully reconnoitered; and gun pits, traffic lanes, and snow parapets should be prepared. Direct support artillery should, when the situation permits, be located adjacent to or within the perimeter of infantry elements. Under winter conditions it is impossible to dig in a position, but parapets of snow and ice can be erected. In extreme cold, some type of heated shelter will be required for personnel whose duties must be performed in the open.

b. Camouflage discipline must be strictly enforced. Limited camouflage can be obtained by application of paint. Tracks left in snow cannot be effectively covered except by a fresh snowfall, and even in the arctic there are many periods without snowfall. Therefore, vehicles and troops must move only by designated trails and roads to maintain camouflage.

182. Observation

a. During winter months, good observation is limited to a few hours per day because of the short periods of daylight. Snow cover reduces depth perception and obscures ground features and landmarks. Glare of the sun upon the snow is intense and unless personnel are wearing dark glasses, continued exposure will cause painful snow blindness. Amber filters for observing instruments are required to reduce eye strain. Personnel operating observing instruments must be relieved frequently or provided with shelter. Forward observer teams should be well trained in the use of oversnow equipment and in rock climbing technique.

b. Extensive use of aerial observation is required. Army aircraft are invaluable for reconnaissance, location of targets, and adjustment of fire.

c. Standard countermortar radar and surveillance radar, like other electronic equipment, are sensitive to extreme low temperatures. Heat must be applied to the console before it will operate when temperatures are low. A heated shelter is required for plotting personnel.

d. Sound recorders are not affected by low temperatures. Microphones will function satisfactorily at low temperatures and under 4 to 6 inches of dry snow. Time required to establish a sound base in arctic regions is normally 4 to 5 times that required under normal conditions.

183. Field Artillery Fires

a. At times, especially during extremely cold periods and periods when temperature changes are sudden, ballistics of weapons and ammunition are affected. During extremely cold periods, a *K* factor of 100 meters or more per thousand is not uncommon. Fuze quick is ineffective in deep snow, as up to 80 percent of the fragmentation is absorbed by the snow cover. An airburst with either a variable time (VT) or mechanical time fuze is most effective against personnel in the open. Although VT fuzes are adversely affected by conditions of extreme cold and there is an

increase in the number of malfunctions, it is one of the most effective fuzes for the arctic. For information concerning the effects of nuclear weapons in snow, see FM 101-31.

b. Deep snow has an adverse effect on chemical shells. The canister from a base ejection shell may be smothered in the snow. The phosphorus shell produces the desired smoke but leaves phosphorus particles buried in the snow that may remain a possible hazard for several days.

c. During extreme cold, the rate of fire will be slow until weapons have warmed; this is especially true for weapons having a hydropneumatic type of recoil. Preparation of ammunition is slow when temperatures are low because of the reduced efficiency of personnel.

d. Under conditions of extreme cold, heating blankets or other means may be necessary to protect missile motors which use solid propellants.

184. Communications

a. Radio is a rapid and useful means of communication in low temperatures and areas covered with deep snow. However, dry and wet cell batteries are seriously affected by extreme cold, both in storage and operation. The efficiency and life of batteries decrease in direct ratio to the cold.

b. Wire lines are normally restricted to existing trails and roads; and are vulnerable to all existing hazards. Poles are broken by storms or unrooted by frost heaves. Wire laying by light aircraft is economical and should be employed when practicable. It is usually less time-consuming to lay new lines than to attempt repair of old ones. Wire must be stored in a warm place up to the time of laying.

185. Maintenance

Maintenance is critical in northern operations, and careful monitoring of vehicles and equipment, regular maintenance, and the use of arctic lubricants are necessary. Care must be taken in the disassembly of howitzers, since parts freeze and cannot be reassembled. The storage of ammunition, particularly proximity fuzes, must be accomplished carefully.

(Classification)

b. Air support.

- (1) General. Air sorties available to 1st Corps are limited. Available sorties will be employed to supplement other fires. Target priority will be maintained for employment of air alert flights as cleared by the corps fire support coordinator. Target director posts SCARECROW and PACKRAT available for night and bad weather bombing. All air attacks short of bomb line controlled by FAC and/or TDP.
- (2) Allocation.
 - (a) Air support effort available to 1st Corps—75 sorties. TAF provides air alert aircraft for helicopter-borne operation on request.
 - (b) Thirty-two tac ftr sorties allocated to 1st Inf Div (separate from corps allocation in (a) above) for period of 230230 May to 230330 May. Priority of employment zone of main attack.
 - (c) Air Force personnel allocated to 1st Inf Div are further allocated as indicated.
 1. ALO—1 to DTOC.
 2. FAC—7.
 - (a) Two to each bde.
 - (b) One to div arty. (Airborne on request.)
 3. One air coordinator, THUNDER 12, available through DTOC.
- (3) Miscellaneous. Appendix 1, Air Fire Plan, to Annex C, Fire Support Plan.

c. Artillery support.

- (1) General. Arty spt phase 1 of the atk with a preparation beginning with nuclear fires at H-26 min; nonnuclear fires beginning at H-20 will cont (as scheduled) to approx H+10 min. A preparation will be planned for phase 2.
- (2) Organization for combat.
 - (a) Field arty:
 1. 1st How Bn (105-mm) (SP), 2d Arty: DS 1st Bde.
 2. 1st How Bn (105-mm) (SP), 4th Arty: GS reinf 1st How Bn 2d Arty, on order DS 3d Bde.
 3. 1st How Bn (105-mm) (SP), 6th Arty: DS 2d Bde.
 4. 1st How Bn (155-mm/8-in) (SP), 18th Arty: GS.
 5. 1st Msl Bn (HJ) (SP), 20th Arty: GS.
 6. 1st How Bn (155-mm) (SP), 50th Arty: GS reinf, 1st How Bn, 6th Arty.
 7. 1st How Bn (Towed), 51st Arty: GS reinf, 1st How Bn, 24th Arty.
 - (b) Air def arty: 1st AW Bn, 48th arty, protect in priority nuclear firing units, division arty, division CP.
- (3) Miscellaneous.
 - (a) Air targets will be marked as follows: First rd, red smoke; second rd, green smoke.
 - (b) Restrictions on arty fires during helicopter-borne operations to be announced.
 - (c) Priority of position areas:
 1. Nuclear firing units.
 2. Direct support units.
 3. Others.
 - (d) Appendix 2, Artillery Fire Plan.

d. Chemical support. See Artillery Fire Plan.

(Classification)

(Classification)

e. Nuclear support.

(1) General.

- (a) 100 nuclear weapons are available to 1st Corps. Yields range from 1- to 20-KT. Corps retains 40 weapons for employment.
- (b) Atk means available within corps are artillery cannon and missile. Tac air spt is available on request.

(2) Allocation nuclear weapons:

(a) Yields:

- 3/Short range cannon/Bravo (1 KT)
- 2/Medium range cannon/Charlie (2 KT)
- 3/Long range cannon/Delta (5 KT)
- 1/Long range cannon/Echo (10 KT)
- 1/Free rocket, large/Foxtrot (20 KT)

(b) Planned employment: (Phase 1)

Scheduled

- 2/Short range cannon/Bravo (1 KT)
- 2/Medium range cannon/Charlie (2 KT)
- 2/Long range cannon/Delta (5 KT)

6

Available for on-call and targets of opportunity and retained for phase 2—on-call targets.

- 1/Short range cannon/Bravo (1 KT)
- 1/Long range cannon/Delta (5 KT)
- 1/Long range cannon/Echo (10 KT)
- 1/Free rocket, large/Foxtrot (20 KT)

4

(3) Miscellaneous.

- (a) Very high assurance of no significant fallout contamination is required.
- (b) Friendly troops—negligible risk.
 - 1. Scheduled fires Phase 1—Warned and protected.
Phase 2—Warned and exposed.
 - 2. On-call fires Warned and exposed.
 - 3. Other fires Unwarned and exposed.
- (c) No damage to MUHLHAUSEN (0274) is to result from nuclear fires.

f. Coordinating instructions.

(1) Fire planning and control.

- (a) DS Arty Bn fire plans to div arty 222000 May.
- (b) Preplanned air missions to TASE/DTOC 221700 May.
- (c) Changes to nuclear fire plan to TASE/DTOC NLT 230100 May.
- (d) Cancel scheduled fires (nuclear and air) NLT 230130 May.
- (e) Emergency cancellation of fires in clear text.
- (f) Chemical fire requests to TASE/DTOC 221700 May.

(2) Safety.

(a) Air.

- 1. Units post air watch; no firing of VT fuze when friendly aircraft are endangered.
- 2. Frontline marked on request with orange panels.
- 3. Emergency signal to lift airstrike—green star parachute, followed by yellow smoke.

(Classification)

(Classification)

(3) Miscellaneous.

(a) Restrictions on arty fires during helicopterborne operations to be announced.

(b) Priority of positions areas: Nuclear firing units.

(c) Appendix 2, Artillery Fire Plan.

d. Chemical support. See artillery fire plan.

e. Nuclear support.

(1) General.

(a) 100 nuclear weapons to 1st Corps. Yields from 1- to 20-KT.

(b) Atk means available within corps are arty cannon and missile. Tac air available on request.

(2) Allocation.

(a) 1st Mech Div.

3/Short range cannon/Bravo (1 KT)

2/medium range cannon/Charlie (2 KT)

3/Long range cannon/Delta (5 KT)

1/Long range cannon/Echo (10 KT)

1/Free rocket, large/Foxtrot (20 KT)

(b) 2d Mech Div.

5/Short range cannon/Bravo (1 KT)

4/Medium range cannon/Charlie (2 KT)

6/Long range cannon/Delta (5 KT)

2/Long range cannon/Echo (10 KT)

3/Free rocket, large/Foxtrot (20 KT)

(c) 3d Mech Div.

3/Short range cannon/Bravo (1 KT)

2/Medium range cannon/Charlie (2 KT)

2/Long range cannon/Delta (5 KT)

2/Long range cannon/Echo (10 KT)

1/Free rocket, large/Foxtrot (20 KT)

(d) 4th Armd Div (phase II).

5/Short range cannon/Bravo (1 KT)

6/Medium range cannon/Charlie (2 KT)

4/Long range cannon/Delta (5 KT)

3/Long range cannon/Echo (10 KT)

2/Free rocket, large/Foxtrot (20 KT)

(e) 1st Corps.

4/Short range cannon/Bravo (1 KT)

6/Medium range cannon/Charlie (2 KT)

10/Long range cannon/Delta (5 KT)

10/Long range cannon/Echo (10 KT)

10/Free rocket, large/Foxtrot (20 KT)

(Classification)

(Classification)

f. Coordinating instructions.

(1) Troop safety.

(a) Nuclear safety line, as indicated, troops to be warned and protected.

(b) Warning Per Corps SOP no later than H—50 min.

(2) Report of damage assessment to TOC on completion of study.

(3) Air and arty fire plans to corps FSE by 222400 May.

(4) Air targets will be marked with yellow smoke.

4. ADMINISTRATION AND LOGISTICS

a. ADMINO 2.

b. Available Supply Rate 22-25 May.

105-mm how—160

155-mm how—130

175-mm gun—80

8-in. how—100

c. Special ammunition load, SASP locations and resupply instructions: App 4, Special Ammunition Logistics.

5. COMMAND AND SIGNAL

a. Signal.

(1) SOI, Index 1-7, eff 220001 May 19__.

(2) Joint SOI, Index 22-3a, eff 220001 May 19__.

b. Command.

(1) Corps FSE, corps CP.

(2) Div report casualties.

Acknowledge.

STEVENS

Lt Gen

Appendixes: 1—Air Fire Plan.

2—Artillery Fire Plan.

3—Air Defense (omitted).

4—Special ammunition logistics
(omitted)

Distribution: A

2d Corps

3d Corps

BAOR

OFFICIAL:

/s/ Roth

ROTH

G3

(Classification)

Classification

Copy Nr 14
1st Inf Div
PACIFIC CITY (1935), BAHA
132000 Sept 19__

Appendix 2 (Artillery Fire Plan) to Annex C
(Fire Support Plan) to OPORD 18.

Map: BAHA, 1:50,000, CAPE FORTH-ATHENAL.

1. Boundaries, LD, axis of advance, concentrations planned -- see overlay.
2. Scheduled fires.
 - a. Countermortar program. Fire parallel sheaf, center range, shell HE, first volley VT, subsequent volleys 1/2 quick and delay.
 - b. Assembly areas. Open sheaf, 1/2C range spread. First volley Quick. Subsequent volleys mixed, VT, quick and WP.
 - c. Smoke missions. Shell HC. Smoke for period indicated or lift on coll. Units be prepared to smoke concentrations as follows:
1st How Bn 3d Arty - AF 242, provide own observer.
1st How Bn 9th Arty - AF 123, 1st How Bn 5th Arty will provide obs.
3. Request 3d Div Arty schedule AL 345 early and smoke on coll.
4. Request Corps arty sked AF 60, AF 243, AK 324; include hostile artillery in counterbattery program.
5. Air strikes marked by red smoke.
6. Emergency signal for lifting fires - green star cluster.

ACKNOWLEDGE

Tobs: A -- Psn Areas and Zones of Fire

Distribution: A
2d Inf Div
3d Inf Div
4th Armd Div

OFFICIAL
A/ Smith
SMITH

GRIFF
MAJ GEN

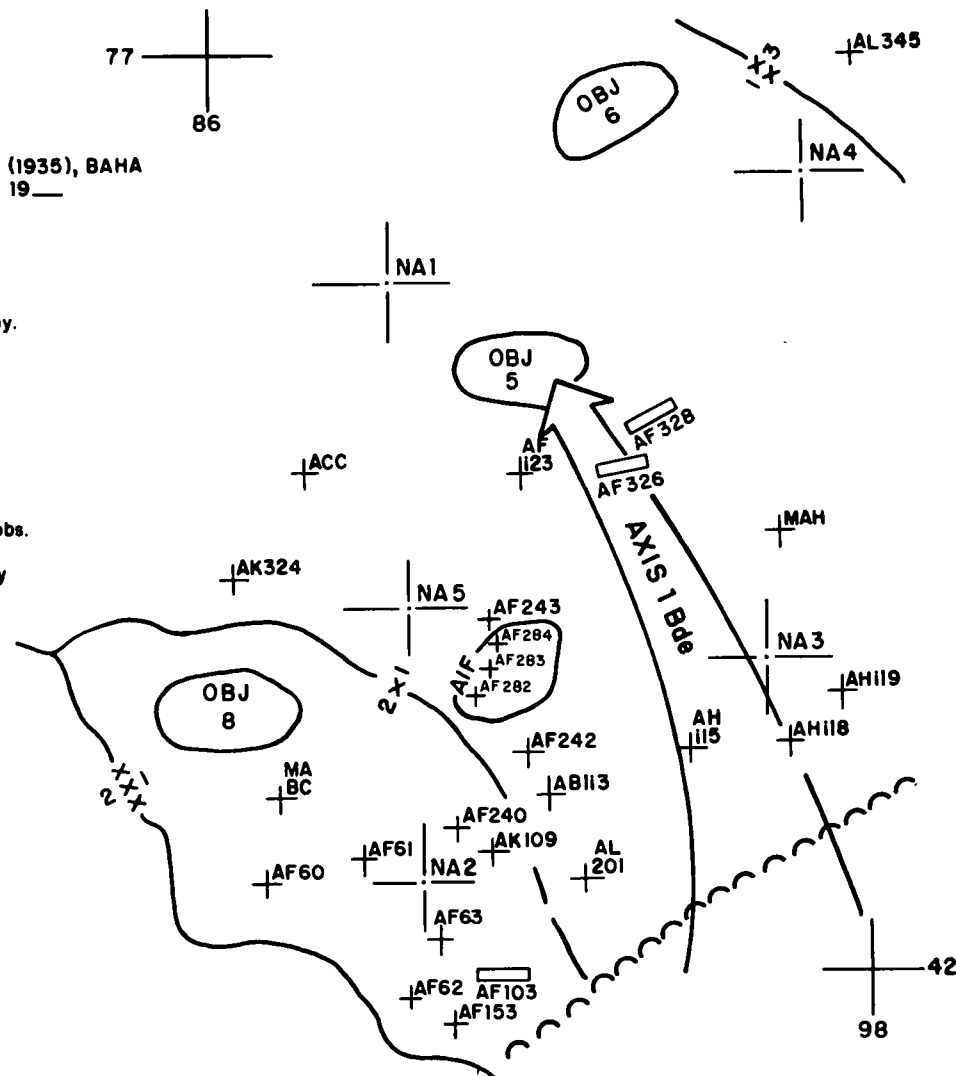


Figure 18. Graphical portion of the artillery fire plan.

Tgt Ref Number	Description	Coordinates	Altitude	Remarks
AB 113	Pos UC	9200 4714	48	400 x 100, Az 1300
AF 60	Eng sup dump	8623 4567	46	req corps arty sked
AF 103	Troops dug in	9002 4201	45	sked at H-hr. 600 x 200, Az 1600
AF 123	OP	9134 6013	59	sked early, smoke on call.
AF 153	AW	8925 4087	43	sked
AF 240	Assembly area	8976 4692	47	RI of NA 2, on call.
AF 283	Trench occupied	9009 5207	54	sked
AH 115	HMG	9425 4908	50	sked near H-hr
AK 109	CP	9079 4620	45	RI of NA 2, on call.
MABC	2 Med Mortars	8631 4790	41	sked in CM program
MAH	4 hvy mortars	9595 5901	40	sked in CM program
ACC	4 hvy howitzers	8750 6009	37	req Corps sked in CB program

) Figure 19. Target list of the artillery fire plan.

TGT Ref No	Description	Coordinates	ALT	HOB	Size	Az/ Bearing	Req Cov	MSD			NIGA		Tree Blow Down	RI	Remarks
								UE	WE	WP	Ra- dius	GZ Int			
NA 1	Msl Fire Con	8790 6831	41	407			P 90	5800	4400	2500	800	1000	1900	900	Will be fired early.
NA 2	Trps in Foxholes	8831 4131	62	115	530		1/3	2200	1900	1700	400	180	550	600	
NA 3	Trps in Foxholes	9580 5218	58	115	550		1/3	2200	1900	1700	400	180	550	600	
NA 4	Trps in APC's	9607 7512	46	465	1000		1/3	8400	6100	3300	1100	1800	1900	1090	On call. Pos B-2, Golf, 50 KT.

LEGEND: Req Cov: Commander's required percentage of coverage
MSD: Minimum Safe Distance
NIGA: Neutron induced Gamma activity.

GZ Int: Ground Zero Intensity.
RI: Radius of integration.

Figure 19—Continued



Bn	Btry	-16	-14	-12	-10	-8	-6	-4	-2	+1	+2	+4	+6	+8	+10	Conc on call	Remarks
1/3rd		MABC 54			AF282 54			AF283 54		AF103 72			AF153 54				AF242-Smoke on call.
1/5th		MABC 54			AF123 72			AF284 54		AF103 72			AF62 54		AF328 54		AF123-Smoke on call.
6/50th		MAH 54			AF242 54			AF326 54			AH115 72			AH119 54			
1/11th	A	NA2 2KT			AC201 16			AF326 16		AC201 24			AH118 24		AF328 24		POS A-3
1/11th	B/1	NA1 20KT															POS B-4
1/11th	B/2	NA3 20KT															POS B-2

Figure 20. Schedule of fires of the artillery fire plan.

d. The artillery fire plan shown in figures 18 through 21 is for a preparation beginning at H—16 minutes and ending at H+10 minutes. The same format is equally applicable in preparing a program of fires or a counterpreparation except that the time of opening fire cannot be predetermined.

FIRING UNITS	A 1 F		
1st How Bn, 8th Arty	AF 282		
1st How Bn, 10th Arty	AF 283		
6th How Bn, 50th Arty	AF 284		

Figure 21. Table of groups of fires on call of the artillery fire plan.

APPENDIX VI

FIRE SUPPORT COORDINATION CHARTS AND FORMS

1. General

The requirement for rapid decisions to effect appropriate fire coordination dictates the need for graphic display of information in the fire support coordination center (FSCC) or fire support element (FSE). Specific information required is determined by the fire support coordinator operating the FSCC or FSE and should conform to the internal operating procedures of the headquarters.

2. Fire Support Coordination Center or Fire Support Element Charts

In addition to situation maps, fire capabilities overlays, and planning maps for future operations, the charts in figures 27 through 32 have been found to be helpful in furnishing a ready reference for much used or needed information. These charts are not intended to be mandatory.

Units	Code name	Call sign		Location		Time reported	Mission	Active		Remarks
		Tel	Rad	Clear	Coded			Tubes	Lchr	
1/3	Cassidy	Smoker	Artery	320561	NA12B7	071310	DS 1st Bde	(18)		
A	Corky	Smoker	Artery	291430	TL67G9	070600		6		
B	Blackie	Smoker	Artery	250367	MH1605	070900		6		
C	Rose	Smoker	Artery	241478	PN76H4	070910		6		
1/11	Lear	Congo	Topeka	300310	JO27F1	070800	GS	22	4	
101 Arty Gp	Comanche	Dagwood	Stucco	470819	AM27H7	061900	GS, Reinf 1st Div Arty	(60)		
2/50	Danger	Barrel	Tango	410620	BX8016	070600		18		
3/51	Potter	Jason	Penny	381962	DE10G6	061400		18		
4/70	Dancer	Shamrock	Caesar	520320	GH27A9	061500		12		
5/71	Chacha	Perry	Sapphire	370512	XF98Z8	061000		12		
102 Arty Gp										
1/50										
2/51										
3/70										
4/71										
3/82										

Figure 27. Organization for combat and status of units.

(Classification)

ANNEX A (ARTILLERY COUNTERFIRE INFORMATION FORM) TO SOP
See artillery counterfire information form, as shown in FM 6-121.

(Classification)

(Classification)

ANNEX D (TACTICAL MISSIONS) TO SOP

AN FA UNIT WITH A MISSION OF--	ANSWERES CALLS FOR FIRE FROM--	ESTABLISHES LIAISON WITH--	ESTABLISHES COMMUNICATION WITH--	HAS AS ITS ZONE OF FIRE--	FURNISHES FORWARD OBSERVERS--	DISPLACES WHEN*--	HAS ITS FIRES PLANNED BY
DIRECT SUPPORT	SUPPORTED UNIT. OWN OBSERVERS. HIGHER ARTY HQ.	SUPPORTED UNIT (DOWN TO BAT- TALION LEVEL)	SUPPORTED UNIT.	ZONE OF SUP- PORTED UNIT.	TO EACH COM- PANY SIZED MANEUVER ELE- MENT OF SUP- PORTED UNIT	UNIT COMD DEEMS NECESSARY OR ORDERED BY HIGHER ARTY HQ.	DEVELOPS OWN FIRE PLAN.
REINFORCING	REINFORCED UNIT. OWN OBSERVERS. HIGHER ARTY HQ.	REINFORCED UNIT.	REINFORCED UNIT.	ZONE OF FIRE OF REINFORCED UNIT	UPON REQUEST OF REINFORCED UNIT.	REQUESTED BY REINFORCED UNIT, OR ORDERED BY HIGHER ARTY HQ	REINFORCED UNIT.
GENERAL SUPPORT	HIGHER ARTY HQ OWN OBSERVERS.	NO INHERENT REQUIREMENT.	NO INHERENT REQUIREMENT (INTERNAL COMM ONLY).	ZONE OF SUP- PORTED UNIT	NO INHERENT REQUIREMENT.	ORDERED BY HIGHER ARTY HQ	HIGHER ARTY HQ.
GENERAL SUPPORT REINFORCING	HIGHER ARTY HQ. REINFORCED UNIT. OWN OBSERVERS.	REINFORCED UNIT.	REINFORCED UNIT.	ZONE OF SUP- PORTED UNIT TO INCLUDE ZONE OF FIRE OF REINFORCED UNIT	UPON REQUEST OF REINFORCED UNIT SUBJECT TO PRIOR APPROVAL OF HIGHER ARTY HQ.	ORDERED BY HIGHER ARTY HQ. OR UPON REQUEST OF REINFORCED UNIT SUBJECT TO PRIOR AP- PROVAL HIGHER ARTY HQ.	HIGHER ARTY HQ.

*NOTIFIES NEXT HIGHER HEADQUARTERS OF TIME, POSITION, AND FIRE CAPABILITIES.

Figure 44. Field artillery tactical missions.

(Classification)

(Classification)

17. TARGET ACQUISITION BATTALION

- a. The target acquisition battalion will establish a survey information center (SIC) in the vicinity of the corps command post.
- b. Subordinate units coordinate survey plans with SIC.
- c. Schedule of net messages will be announced by corps artillery.

18. FIELD ARTILLERY SEARCHLIGHT BATTERY

See paragraph _____, corps standing operating procedures.

- a. Employment of searchlight illumination as directed by corps commander.
- b. Searchlight battlefield illumination will be coordinated by S2, corps artillery.

19. FIRE SUPPORT COORDINATION

Note. Since fire support coordination is of interest to units other than artillery, this paragraph is extracted from the corps SOP and included in the artillery annex for emphasis.

- a. References: FM 6-20-1 and FM 101-5.

- b. Safety procedures:

- (1) Fire support coordination line:

- (a) Division submits recommended fire support coordination line location to corps fire support element.
- (b) Corps FSE coordinates fire support coordination lines recommended by divisions and forwards recommended fire support coordination line to the army fire support element.

- (2) When ordered, one of the plans given below will be placed in effect or a flak suppression program may be directed.

- (a) Code words. Corps signal operating instructions.
- (b) Plan Whiskey. No trajectory will cross or come within a specified distance either side of a line defined by two grid references. The distance either side of the defined line will be 500 meters unless specified in the transmission of the plan. For example, "Execute Plan Whiskey, target area 5135 to 5237, time 1020 to 1040." On receipt of this order, all fire will be suspended over this area (500 meters either side of a line from grid reference 5135 to grid reference 5237) from 1020 to 1040 hours. If a wider area is required, the order may be "Execute Plan Whiskey, target area 5135 to 5237, distance 1,000 meters, time 1020 to 1040."
- (c) Plan Victor. No trajectory with a maximum ordinate of 1,100 feet will pass over or into an area defined by a circle. The radius of which will, unless otherwise specified, be 2,500 meters. This plan may be used when planes fly no lower than 1,500 feet. The order to implement this plan is similar to (b) above; for example, "Execute Plan Victor target area 5133, time 1020 to 1040."
- (d) Plan November. No trajectory other than small arms will pass over or into an area defined by a circle of a stipulated radius. The radius of which will, unless otherwise specified, be 2,500 meters. This plan may be used when planes operate at very low altitude. It is the same as Plan Victor except the ordinate of the support fire is not considered. All fire is suspended. The size of the area may be changed by specifying a radius other than 2,500 meters. The order to implement this plan is announced as in (c) above.

- c. Fire support planning and fire support plans: See FM 6-20-1 and FM 6-20-2.

- d. Fire planning and fire plans: See FM 6-20-1.

(Classification)

(Classification)

20. GENERAL

Conform to paragraph _____, Logistics, SOP, 1st Corps.

21. AMMUNITION

Corps artillery informs subordinate units of available supply rate.

22. EVACUATION

Units directed to nearest clearing station.

23. SERVICES

Subordinate units inform corps artillery of service requests.

24. MAINTENANCE

Conform to paragraph _____, Logistics, SOP, 1st Corps.

25. CALIBRATION PROCEDURE FOR ARTILLERY

See paragraph _____, Logistics, SOP, 1st Corps.

26. REPORTS

a. Ammunition report. Report amounts of ammunition in excess of basic load every 24 hours as of 2400 hours.

b. Equipment shortage report. Conform with paragraph _____, Logistics, SOP, 1st Corps.

c. Unit equipment status report. Conform with paragraph _____, Logistics, SOP, 1st Corps.

Section VI. COMMAND

27. COMMAND POSTS

Report movement and location to corps artillery.

28. LIAISON

a. Corps artillery maintains liaison with—

(1) Corps headquarters.

(2) Artillery headquarters of the adjacent corps on the right.

(3) Each division artillery headquarters with the corps.

(4) Air reconnaissance support battalion or elements at appropriate reconnaissance airfield.

(5) Separate corps task force.

b. Division artillery maintains liaison with adjacent division artillery headquarters on the right.

29. COMMUNICATION

a. General. Conform to corps SOI and SSI. All communication officers extract information as necessary and as authorized.

b. Radio nets. As described in FM 6-10 and FM 44-series.

(Classification)



